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POPULAR FALLACIES IN THE PRACTICE OF OTOLOGY.*

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We are all more or less creatures of habit. This may have its advantages, but it also has disadvantages. One of the disadvantages is the perpetuation in practice of methods of treatment which an increasing knowledge has long since shown to be illogical and useless. It is my purpose in this paper to point out some of the more conspicuous examples of this fact in the practice of otology.

Otology developed as a field for special practice before much was known of the diseases of the nose. An increased knowledge of these diseases brought a better insight into the etiology of the diseases of the middle ear. From that time otology as an addendum to ophthalmology ceased and the otologist became more and more a rhinologist. This situation persists to this day, the result being that many problems, especially those relating to treatment of middle ear disease, are referred back to a rhinological basis for solution, too little attention at times being given to the otological aspect of the case. The fact is well established that the acute inflammatory diseases of the middle ear take their origin with few exceptions from extension through the Eustachian tube of infection beginning in the nose and pharynx. The fact, too, is well known that subacute and more chronic forms of middle ear disease often owe their existence to chronic disease of the nose and pharynx, such as hyper-

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trophy of the posterior ends of the turbinated bodies as well as enlargement of the adenoids and of the faucial tonsils. The result has been that in cases of recurring acute inflammation in the middle ear, as well as in the chronic forms of middle ear trouble, whether this be the chronic tubo-tympanic catarrh or the chronic suppurative otitis media, our first thought is for the correction of any existing conditions in the nose or pharynx which may constitute an etiological factor. Right here has developed one of the most striking fallacies in the practice of otology. Too little discrimination has often been made between those conditions in the nose and throat which can rationally be expected to be a factor in the etiology of middle ear trouble and other conditions for which there are no grounds for attributing such a relation. The most striking fallacy, I believe, is the assumption that any existing alteration in the nasal passages, especially such as the usual anatomical variations like the irregularity of the nasal septum and the compensatory variations in the size of the lower and middle turbinated bodies, are causes for middle ear disease. The practice of correcting all such anatomical variations in the nose in cases of middle ear trouble began in those early days of rhinology when the relationship between diseases of the nose and middle ear was first recognized. Those of us who have been more keenly interested in diseases of the ear have long since recognized that these anatomical variations take no part in the etiology of middle ear trouble except possibly in those exceptional cases where this anatomical variation is causing unmistakable nasal symptoms, especially in the form of obstruction to nasal respiration.

The impaired function of the Eustachian tube, especially where there persists a more or less permanent occlusion, was early recognized as a cause for many of the symptoms of middle ear trouble, especially for defective hearing. The practice of systematic inflation of the middle ear became a standard method of treatment for middle ear disease. The value of inflation of the middle ear in cases presenting tubal occlusion is well recognized. It is, however, one of the common fallacies of otological practice to assume that in all cases of obstructive middle ear deafness long-continued inflation of the middle ear is indicated. As a matter of fact in all the cases of primary fixation of the stapes and in most of the cases of chronic adhesive middle ear catarrh, inflation of the middle ear is not indicated and brings no results. In most of these chronic cases the tubes are not obstructed but are even more patulent than in a normal case. The only time when inflation is at all indicated in such cases

is during the acute exacerbations when there is an increase in the ear symptoms from temporary swelling of the tube or accumulation of secretion in the tympanum.

The habit of treating by inflation all those cases with ear symptoms, those presenting symptoms of tinnitus and vertigo, as well as those of defective hearing, arose before the use of the tuning forks made it possible to make a clear differentiation between the cases of nerve deafness, primary fixation of the stapes and the chronic obstructive middle ear catarrh. In many quarters this practice is still carried out and the fact that the vertigo and sometimes the tinnitus improves or even disappears while the case is being treated, is taken as a demonstration that the inflation has been instrumental in accomplishing this result. It has been very much to the detriment of otology that we have too often persisted in useless local treatments for cases where our present methods of diagnosis and our knowledge of pathology tells us very definitely that we have to do with changes that are permanent and are no more capable of being influenced by our treatment than is a hair that has turned gray. The habit still persists in the practice of many otologists of assuming that the progress of the deafness may be checked by local treatment, whether this deafness be the result of degeneration of the eighth nerve, primary fixation of the stapes or the chronic adhesive middle ear processes. Our knowledge of the pathology of these diseases has long since made it quite clear that this assumption is quite unwarranted.

I cannot end this paper without calling attention to the persistence of a popular fallacy regarding chronic suppurative otitis media. There is a wide chasm between the old view that a chronic discharge from the ear was nature's method of ridding the system of poisonous substances and that the checking of the discharge was fraught with imminent danger of serious complications and the more recent view that all cases of chronic discharge from the ear which cannot be checked by local treatment in a reasonable period are cases where radical surgical measures are called for. Both of these views are fallacious. The former, no doubt, had its origin in the phenomenon observed occasionally when a cessation of a purulent discharge from the ear was promptly followed by the development of symptoms of a fatal intra-cranial complication. We know now that the cessation of the discharge in such cases is the result of a perforation of the middle ear disease into the cranial cavity and the beginning of a fatal complication. The other fallacy that all cases of chronic discharging ears are a serious menace

to the individual dates from the time when it became recognized that cases of brain abscess, as well as many other fatal intra-cranial complications, such as meningitis and sinus thrombosis, frequently develop from the intra-cranial extension of chronic middle ear suppuration, even in cases where the ear disease was causing no local symptoms aside from the discharge and a depression of hearing. As a matter of fact, most of the cases of chronic discharging ears are not a serious menace to the patient in the sense that they may lead to an intra-cranial compliction. It is only those cases of chronic suppuration where the process has extended beyond the mucous membrane lining the middle ear cavities to the underlying bone that the probability of an intra-cranial complication exists. It is, therefore, only these cases where radical surgical treatment is called for. With the knowledge which we now possess regarding the symptoms in the two types of chronic suppurative otitis media, we have, as a rule, little difficulty in differentiating the dangerous from the non-dangerous cases: in other words, those cases which call for radical surgical measures and those where local treatment alone is to be used, even when such treatment fails to check entirely the discharge from the ear.

A more or less widespread fallacy has been the assumption that a persistence of moisture after the radical mastoid operation is an indication of the failure of this operation. This assumption is based on a false conception of the real indication for the radical mastoid operation. The indication for this operation is not for the cure of otorrhea but for the elimination of a dangerous focus of infection which is invading the temporal bone and which may at any time lead to a serious, even fatal intra-cranial complication. The dangerous focus is located somewhere outside the confines of the tympanum, either in the attic, the aditus or the antrum. A radical mastoid which eradicates the bone invading process and leaves the attic, aditus and antrum dry, has accomplished the real purpose for which this operation was indicated. The presence, after the radical mastoid, of moisture which comes from the patulent Eustachian tube is not, in any rational sense, an indication that the operation has been a failure.

THE ETHMOIDAL PROBLEM.*

Dr. Ross Hall Skillern, Philadelphia.

When your secretary asked me to read a paper before this society, I was at somewhat of a loss to choose an appropriate topic but after consideration decided to present a subject which has long been, to me, one of the most perplexing and ofttimes disappointing in the whole category of our specialty.

As one would gather, the title at once suggests that this discourse will concern itself with some condition or affection of the ethmoid labyrinth which proves most stubborn, if not absolutely unreactive to any form of treatment that one institutes against it. I speak of the old chronic suppurative ethmoiditis, which too often occurs after a more or less extensive operation upon the ethmoid structures.

A patient, usually of importance, has been under our care for some time with a profuse chronic unilateral muco-purulent discharge, for the most part post-nasal, particularly annoying in the morning, chiefly on account of the glue-like secretion which accumulates in the throat and naso-pharynx. After weeks of treatment and having convinced ourselves that the frontal, maxillary and sphenoid are not diseased, in an unguarded moment, perhaps having lost patience, we suggest opening and curettage of the ethmoid cells. This advice is readily accepted and the operation performed, intra-nasally of course, and under local anesthesia. We are surprised how small the quantity of purulent secretion is evacuated, as well as how much apparently healthy mucosa, or at least but slightly affected, is removed during the operation. In any event, at the conclusion of the procedure, we are not entirely satisfied, in our own mind. It occurs to us that the macroscopic pathology of the removed fragments did not justify the assumption that they were solely the cause of the troublesome discharge which had proved of such annoyance to our patient. Following along this train of thought, the suggestion and even the apprehension arises that we have not been as thorough in our exenteration as we might have been and indeed, as subsequent events prove, as was necessary for the eradication of the infection. However, we are quite optimistic and feel that after all with the cells opened by regular applications of argyrol or similar pigments, at least a great amelioration

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of the symptoms will be brought about. After many more weeks of treatment, the fact gradually forms itself home (disagreeable as it is) that the condition of the patient is not only unimproved but, if anything, is actually made worse as a result of our careful and painstaking surgery. This is then the dilemma we find ourselves in and finally we are only too glad to shunt off our patient (and not infrequently at his own suggestion) into the care and responsibility of one of our colleagues, where he probably will fare but little better than he did under our own manipulations.

This is a typical retrospect of many of these cases. It is my purpose, gentlemen, to continue the narrative from this point and to analyze as far as possible the cause of our failures, as well as to advance certain suggestions as to the procedures to be adopted for the ultimate eradication of the infection.

It will be of little avail to state that we should not have operated in the first place, at least, in the method that was followed. Indiscriminate removal of all the ethmoid cells within reach of our forceps was as unnecessary as it was unscientific. Here it was that we departed from the old maxim in sinus affections, "Find the pus and follow it to its source." We used our best judgment and by a sweeping operation hoped to include all the infected parts within the scope of our surgical procedure. From the very first, however, we were practically certain to fail on account of the almost insurmountable obstacles which are for the most part present in suppurative ethmoiditis. In the vast majority of cases, it is difficult and often impossible to adequately open all ethmoid cells by intra-nasal methods. The cells which are most severely infected are usually those lying in the most inaccessible places, as for example, a supra-orbital cell in the anterior group or a deep-lying supra-maxillary cell in the posterior group. These can be and, as a matter of fact, usually are left undisturbed after even a complete intra-nasal exenteration where they remain to reinfect the remnants of the previously healthy cells which have been reduced to a disorganized mass by our forceps and curette. In the ordinary run of these cases where the discharge was the predominating symptom, we should have curbed our impatience and systematically studied the conditions with all the means at our disposal. This can properly be preceded by complete removal of the middle turbinate followed by a satisfactory stereoscopic X-ray. Careful and persistent study of these negatives will disclose the anatomic formation of the cells, even if they fail to show the diseased area which, in my experience, they seldom do in a convincing manner. The so-

called extra capsular cells (fronto-ethmoidal, orbito-ethmoidal and maxillo-ethmoidal) are plainly seen in both shape and extent. This knowledge is of inestimable value in making subsequent deductions as to the probable origin of the pathological secretion and will very materially influence and limit the extent of the surgical interference. How much more satisfactory it is to have as a definite object the opening and draining of one or two large suspicious cells than to indiscriminately clean out the whole ethmoid in the hope of removing the diseased with the healthy structures.

The exact method to be followed will, of course, vary with each individual case and is dependent upon following the pus to its source which may be long and tedious, but if carried to a successful termination will more than repay one by the conservation of tissue and prevention of the chronic state, not to mention the satisfaction evolved.

To revert then to our patient, we will presume that conservative means have been applied for a sufficient length of time with little or no influence upon the course of the disease. The suppuration continues with but slight abatement and it becomes apparent that it can only be greatly influenced by some form of surgical intervention. What shall this consist of? To open the lid of the ethmoid by removing the middle turbinate or by assuming the entire labyrinth should be removed and proceeding according to the method of Mosher? Obviously the latter is preferable if we are convinced that a complete exenteration is indicated, but in our case we are by no means certain that the infection is not localized to a few cells where it will be possible to bring about a cure and at the same time conserve a large portion of the ethmoidal structures. Under these circumstances, the removal of the middle turbinate is unquestionably to be preferred, but it is right at this point, we are most apt to disregard our patience and continue the operation by removing those cells which lie convenient to our forceps. This has proven, in my hands at least, to be an irretrievable blunder. Had our better judgment been followed, we would have contented ourselves with the turbinectomy and, after healing has occurred, continued with the further study of the case. In this way not only would the patient have had the benefit of the doubt as to whether resolution of the parts would have set in due to the resulant aeration and drainage incident to the removal of the turbinate, but the operator would have been in a far better position to follow up and judge the origin of the purulent secretion. In this way the offending cells can usually be detected and by constant and persistent attention to these, the infection is finally eradicated.

Suppose, however, we have followed our first inclinations and after removal of the turbinate, attacked with forceps and curette, all cells within reach not neglecting to open the sphenoid. What is the result? Either we have, among other things, reached the diseased parts and removed them sufficiently to bring about a cure, or the patient returns in a few weeks with the most intractable case of suppurating ethmoiditis we have ever had on our hands. The symptoms are too well known to all of us for further comment, but we may recall the morning accumulation of glue-like masses in the naso-pharynx and constant nasal and post-nasal discharge. On examination, the ethmoidal region appears to be bathed in pus which does not seem to take its origin from any particular locality but fairly exudes from the whole of our former operative field. Removing this secretion, as careful as we will, either by cotton mop or lavage fails to disclose its precise origin and no form of conservative treatment from the application of aseptic irrigations, followed by medicaments to suction seems to have more than the slightest temporary influence upon its course. Now let us consider the precise pathological condition that confronts us. We have indiscriminately removed all ethmoid cells within reach, to be sure to the best of our ability but, nevertheless, unavoidably left portion of those originally affected, with the result that instead of the infection being eradicated it gradually spread through the broken down and macerated structures until the whole mass was involved. This presents a very different problem from that which originally confronted us, particularly when one considers the pathological changes that have been wrought. The primary condition was one of purulent infection of one or more, possibly a group of cells, the mucosa of which was thickened and inflamed, but the osseous structures were unchanged both as to form and position. In other words, the labyrinth was intact. Now in its place we are dealing with a disorganized and suppurating mass, the landmarks having been more or less obliterated. The bone has attempted to regenerate with the formation of proliferations of new osseous tissue through the trabecular of the cell remnants as well as the basic structures (lamina papyracea). Fibrous connective tissue has replaced the exuberant granulations which had succeeded the torn and traumatized mucosa with the result that now a semi-dense, suppurating, disorganized mass occupies the position of the operative area. Further operative procedures are soon found to be worse than useless owing to the fibrous character of the attacked tissues making the removal difficult, and on account of the force

required, even dangerous. Given, however, that in an exceptionally favorable case, a large portion of this mass was removed, in but a comparatively short time, reinfection from the original focus would occur with a return to the old condition.

This brings us to the serious consideration of our question. The ethmoidal problem. Let us consider one of these operated cases has presented himself for treatment. Examination has elicited the facts and conditions enumerated above. What shall be our line of procedure? Experience has, or should have, taught us that further haphazard removal of tissue will avail nothing nor can conservative measures be continued indefinitely. We must revert to the old maxim. Find the pus and follow it to its source, but if it was difficult to apply this before, now it has become almost impossible; nevertheless, this must be attempted in order to scientifically and accurately bring the case to a satisfactory conclusion. When one examines the affected region even after thorough irrigation, the task appears thoroughly hopeless, purulent secretion everywhere but apparently coming from nowhere. Even the most painstaking probing fails to find a reservoir, although irrigation into any cavity or recess never fails to bring forth traces of pus. In order to ascertain the source of the discharge, we must begin the systematic study of the case by excluding both the sphenoid sinus and maxillary antrum which almost inariably have become infected during the course of the disease. Needle puncture will bring forth the contents of the antrum, while the cotton-tipped applicator introduced into the opening of the sphenoid will disclose the nature of its contained secretion. Let us suppose that both of these cavities contained an appreciable amount of pus, the question instantly arises in our minds, how much of this is responsible for the amount which accumulates daily in the pose and naso-pharynx of the patient? To obtain this information, it is necessary that these sources be excluded. Several methods have been advanced to accomplish this purpose but I have found the most satisfactory to consist of the introduction of a small quantity of powdered methylene blue on a cotton pledget into the sphenoid after thorough cleansing and drying. Into the maxillary sinus, it can be insufflated through a Lichtwitz needle. The patient is instructed not to blow the nose or clear the throat as far as possible until the next morning, then use a large cloth or towel. Comparison of the masses of blown or hawked-out secretion will at once show the amount that is tinged with blue and that which is clear of coloring matter, thus giving one reliable data from which to draw a conclusion. For corroborative purposes, this can be re-

peated until no further doubts exist. If it is shown that the mucosa of the sphenoid or maxillary is secreting a considerable amount, a differential diagnosis between these two can be made by alternating the application of the methylene blue between them.

Let us presume we have disclosed that both these cavities contribute sensibly to the whole amount of secretion, our first endeavor is to eliminate these from further participation in its production. This can be accomplished in the case of the sphenoid by removing the entire anterior wall particularly toward the floor and the application of nitrate of silver solution in suitable strength (gr. xxx-Lx to oz.). In the case of the antrum, other measures may be necessary, such as a large opening below the inferior turbinate. Only after the discharge from these has been controlled should the ethmoid be attacked, but it should be remembered that the antrum can and often does act as a receptacle for the secretion exuded from the ethmoid. The proposition that now confronts us is to determine what portion of the ethmoid mass is responsible for the discharge. This is beset with so many difficulties as to make it oftimes impossible, but should be attempted before ultra-radical measures are resorted to. The differentiation can proceed by considering the anatomical division into the anterior and posterior group of cells and endeavoring to ascertain whether either of these groups or both are exuding the pathological secretion. At this point, it is well to recall that the anterior cells are small and shallow, while the posterior are large and deep; therefore, the chances are overwhelmingly in favor of the latter being at fault, particularly if the presence of a fronto-orbital cell is excluded which can be done by study of the stereoptical plates. If repeated inspection and the use of the probe shows that one of the constant sources of the secretion lies in the region of the uncinate process, it can pretty well be taken for granted that the secreting area lies in the immediate proximity. If, on the other hand, the discharge is for the most part post-nasal and irrigation over the spheno-ethmoidal region invariably produces shreds and irregular globules of pus, it can hardly be controverted if one states that the infecting source lies in the posterior cells. When both these symptoms are present, which more often is the rule in these cases, the entire mass is usually involved. Suppuration in the anterior cells demands the removal of the uncinate process in order to uncover those situated along the infundibulum as well as in the agger nasi, but it has been my experience that this alone is of little avail, as that portion of the ethmoid lying posterior to the lamella of the middle tur-

binate is always co-affected and requires resection before the infecting process can be brought to a halt. By reason of the operative space thus gained by removal of the uncinate process, the lamella of the middle turbinate can be broken through and the remnants of the posterior cells reached with much greater facility and thoroughness than was previously possible. One is often enabled to make a complete exenteration to the orbital plate and into the spheno-ethmoidal fissure. The basic remains of the bony partitions can be fairly well smoothed off by sand-papering with compact wads of cotton held in the jaws of the nasal forceps. After treatment should consist of daily irrigations with a suitable solution such as hyperchlorite of sodium. Excessive granulations may be touched with a strong solution of silver nitrate. Even should it be determined that the posterior cells are solely involved, this method will give better results than attempting to remove them over the remains of the middle turbinate lamella, as a much wider field is present after the uncinate process is resected and there is less likelihood of overlooking pockets of infected mucosa. If this fails, I know of nothing that remains except the external operation.

Guisez's method or the external operation through the orbital plate is rarely indicated in these cases simply because the patient will not permit it, his symptoms not being of the severity to warrant such a radical procedure. At the most, he has a post-nasal discharge which is particularly irritating on arising, but after being cleaned out, he is fairly comfortable during the day. Headaches are usually not particularly disturbing and retention symptoms rarely present, as the cells have for the most part been widely opened and their points of least resistance are toward the nasal cavity.

On the other hand, absolute indications for the external operation occur after intra-nasal methods have been tried when certain eventualities prevail such as (1) the pressure of a large infected fronto-ethmoidal cell which cannot adequately be opened and drained intra-nasally; (2) the occurrence of frequent and severe headaches traceable to the infection despite treatment; (3) progressively increasing septic condition of the patient; (4) external fistula formation; (5) threatened or actual orbital or cerebral complications.

Ultimate results from operative procedures.

In the uncomplicated case of purulent ethmoiditis without polyp formation after the removal of the middle turbinate, the results obtained are usually inversely to the extent of the surgical disturbance; in other words, the greater the operative interference the

less likelihood of return to normal and ultimate cure. Experience shows that once the middle turbinate is disposed of, the ethmoid labyrinth lends itself to conservative treatment and responds correspondingly with much greater facility than heretofore. In addition to this, the relations having been undisturbed, the ethmoid capsule and cells remain uninjured and intact. After a week or ten days, in how much more favorable a position are we to study and treat the pathological process, not to mention the benefit derived from the aeration and drainage effected by the turbinectomy. The infection will have a tendency to limit itself to one or a small group of cells which only the most careful and persistent study will disclose. This being finally accomplished it is a comparatively easy matter to install a large opening in their most dependent parts with a suitable hook thus permitting aeration and drainage which coupled with irrigation, soon eliminates the active infection and puts the parts on the road towards resolution. In this instance the actual surgical interference has been small; therefore, the function of the nose will be unimpaired and the cure may be termed physiological, as well as therapeutic, leaving nothing to be desired.

Unfortunately, this termination has been rarely observed owing to the fact that we have not followed a rational and systematic line of procedure. Our errors were either of omission or commission, we did not operate at all or having decided to operate, were not satisfied with a simple middle turbinectomy, but continued by removing certain of the ethmoid cells. The results of this are, of course, a continuation of the suppurative process, together with a disorganization of the ethmoid structures which makes a comprehensive study almost impossible. We can therefore state that the ultimate results of this form of operation are to all intents and purposes disappointing and unsatisfactory.

The next step is the complete intra-nasal exenteration, after removal of the uncinate process. This, in my hands, except in isolated instances, has been disappointing for the reason that it has been applied only as a semi-final resort when the pathological process has invaded the basic structures to such an extent that any intra-nasal procedure has been practically hopeless from the first. In those cases where the anatomical configuration lent itself easily to intra-nasal measures, the ultimate results have been crowned with success, but the cures have never been so striking as in the first instance, as the patient was subject to more or less permanent discharge, particularly on the inception of every fresh cold in the head.

As far as the external radical operation is concerned, my experience has been limited to a dozen or more cases. These patients are always relieved, but are never physiologically cured. The operated side of the nose remains a locus minor resistentia, always prone to more or less infecting disturbances, with the usual accompanying symptoms.

In conclusion, gentlemen, let me again state that operative procedures upon the ethmoid, unless slowly, carefully and systematically carried out, are most apt to spell disappointment and radical operations upon this structure do not by any means always end in radical cures.

CAVERNOUS SINUS THROMBOSIS FOLLOWING A SECONDARY MASTODIECTOMY.

DR. JOHN A. ROBINSON, New York City.

On September 28, M. G., age 52, a Russian, was admitted to the New York Eye and Ear Infirmary, on the service of Dr. E. B. Dench, with an acute mastoiditis involving the right ear, a streptococcus infection of two week's duration. A simple mastoidectomy was performed. Neither sinus nor dura was exposed. The patient was discharged on October 15 with the cavity granulating well and a dry canal. He returned to the dispensary at irregular intervals for dressings. About the middle of November he developed an acute purulent otitis, following an acute rhinitis, with a return of the purulent discharge from the tympanum and an increased discharge from the posterior wound.

On November 19 he complained of pain in the ear and mastoid area and frontal headache, with moderate temperature and increased aural discharge. Five days later he was readmitted to the infirmary. Examination on that day showed a moderately tender mastoid. Temperature 100°, pulse 72, respiration 18. There was a moderate amount of discharge from a small post-aural opening and from the canal.

November 25 the headache became worse, the temperature ranged from 99° to 101°, there was increased mastoid tenderness and conjunctival injection of both eyes appeared. The right fundus could

not be seen, as the lens was slightly opaque. The left fundus was normal. There was slight immobility of right eye.

A blood count was made by Dr. S. Dixon, who reported as follows: Red cells, 5,000,000; leucocytes, 20,000; polymorphonuclears, 80 per cent; large mononuclears, 6 per cent; small mononuclears, 13 per cent; transitionals, 6 per cent.

A blood cultivation made at the time was reported seventy-two hours later to be negative.

On November 26 a secondary mastoidectomy was performed. The cavity contained a moderate amount of rather soft granulations. A small area of sinus and dura in the middle fossa was exposed. The sinus was slightly pale at one point, otherwise of good color. On the following day, November 27, the temperature rose to 104°, pulse 106, respirations 26.

After a restless night he complained of frontal headache, pain at the back of the neck and in both eyes, with an increased injection of the conjunctivæ of both eyes. Lumbar puncture showed a turbid fluid under pressure; globulin +, and a cell count of 1,360. No vertigo. No nystagmus. The caloric reaction showed an active labyrinth.

On November 28 his condition was poorer; temperature 103° to 104°. Chemosis affecting both eyes appeared, more marked on the right side. A beginning exophthalmos of the right eye was apparent; the lids became edematous; pupils moderately dilated; Babinski and Kernig present. The patient was rational and complained bitterly of headache. There was a profuse discharge from the canal and cavity.

November 29, temperature 103° to 104°. The chemosis, exophthalmos, ocular pain, and photophobia increased. A second lumbar puncture evacuated a turbid fluid with no increase in pressure, and a reduction in the cell count to 370. A cultivation from the fluid showed a streptococcus longus.

November 30. The temperature continued high, with no remissions. The patient was irrational at times and restless. The appearance of the eyes remained about the same. It was decided that in view of the dual involvement of a purulent meningitis and probable cavernous sinus thrombosis any operative procedure was deemed inadvisable. From this time the condition grew progressively worse, the patient lapsing into coma and dying on December 1. No post mortem examination was permitted.

THE SURGICAL REQUIREMENTS OF THE NASO-PHARYNGEAL ADENOID.*

Dr. J. W. Jervey, Greenville, S. C.

The surgical requirements of the upper respiratory tract are to a certain extent anomalous. For instance, in by far the greater part of the intra-nasal area and the post-nasal space it is practically impossible to employ ligation of bleeding vessels in the observance of that first great principle of all surgery—the control of hemorrhage. And not only so, but even the use of packing is advisedly discountenanced in some of the operative procedures in this locality, except as a measure of very temporary availability. Furthermore, the operative field here is hopelessly septic, so that the operator cannot observe that second great principle of modern surgery—asepsis.

Always, however, the surgeon can command a technique which will provide *safety, sufficiency* and *celerity,* which, in a general way, cover the fundamental prerequisites of all good surgery. Thus, for example, in the operation for removal of the naso-pharyngeal adenoid *safety* is usually provided for physiologically in the control of hemorrhage and sepsis, but without *sufficiency* it is the labor of Sisyphus; *sufficiency,* which is to say thoroughness of ablation, can surely be attained—though it is regrettably true that much incomplete surgery is done in this connection—but without safety it is Pandora's Box; while *celerity,* useful and desirable as it is, is but a farthing candle to the sun if unaccompanied by *safety* and *sufficiency.*

For more than twenty years I have contemplated with a feeling of dissatisfaction and mortification the frequent inadequacy of the operation for removal of the naso-pharyngeal adenoid. Many are the operations I have done in former years feeling deep down in my heart that I was uncertain whether or not the procedure had been properly and thoroughly executed. And many are the little patients we all see even at this day, who, whether at our own hands or some others, have previously been the subjects of incomplete adenoid operations.

*Read at the meeting of the Southern Section of the American Laryngological, Rhinological and Otological Society at New Orleans, April 27, 1920.

It is not because of lack of safety that operations have been inadequate. On the contrary, the comparative safety and apparent ease with which the procedure can be accomplished, coupled with the frequent brilliancy of the results, are the irresistible allurements to the itching hand of the lustful operator. Neither has celerity been lacking in the performance of these operations, for, indeed, the spectacular wizardry of a sweeping swipe, and a bunch of adenoids on the table, is often the outstanding and compelling feature of these operative entertainments. But it needs no ghost to tell us that what has unquestionably been lacking is sufficiency. This, therefore, is to elucidate as best I can the results of my striving for ever so long a time to establish in my technique of the adenoid operation that greatest present desideratum—sufficiency.

Many and various are the methods used and described in the performance of this operation—as many almost as there are operators. Many are the instruments, with their modifications, which have been devised to meet the evidently widely recognized demand for greater efficiency and better results. Their very multiplication is proof of a crying need.

It is a dangerous thing to say, I know, but I believe I was the first to describe (Journal S. C., Med. Assn., June, 1906; Journal A. M. A., May 16, 1908, p. 1600) the mechanics of a fundamental principle which I have used with satisfaction for several years, and which I think is the crux of a technique which, after healing, renders in the operative field a clean, smooth surface, with an absolute minimum of recurrences.

No fancy instruments are needed, but a little fancy instrumentation may not be amiss, for the deft handling of a tool lends confidence alike to patient, operator and spectator, and gives a pleasing grace and finish to what might otherwise be a dull, drab piece of manipulation; even as the lace on milady's lingerie, while not a necessity, yet imparts a certain charm and beauty to the atmosphere; and undeniably it has its uses.

But, I say, no fancy instruments for mine. All that are needed are an old-fashioned Denhardt mouth gag, a tongue depressor, a simple palate retractor, an old-fashioned Gottstein curette, a pair of angular-shank ring-cutting alligator punch forceps of not too heavy construction, and a forefinger that knows what it feels, when and where it feels it. A suction apparatus, sponge forceps and sponges, and a strip of gauze of convenient size to wind about the forefinger, and the armamentarium is complete.

It is important to consider for a moment the surgical relations of the adenoid. I do not remember ever having seen or heard the fact mentioned, but it is nevertheless true, that every naso-pharyngeal adenoid of a size to require surgical consideration is attached in greater or less degree to the superior or posterior aspect, or both, of the Eustachian cushion. This is a surgico-pathological fact of the greatest significance, and on its recognition depend the success and satisfaction of the method I am about to describe.

It has been my observation that nearly all operators attack the adenoid first with forceps, curette or adenotome, removing as much as possible by this means, then going after what remains in the fossae and elsewhere with a variety of curettes or the finger wrapped in gauze. Most of them do not try to see even as much of the field as can be made visible, and many do not even use an exploratory finger to determine the condition after the operative attack. They appear to depend entirely on a sense of touch transmitted through the medium of an instrument—a state of tactile perfection to which, in these cases, I admit I have never been able to rise.

The objection to this usual method—and it applies equally whether one is using an instrument that cuts up, down or from side to side—is that the instrument, on being inserted into its first position, presses against the lateral attachments of the adenoid, and to an appreciable extent pushes the mass of the growth backward or upward, thus tending to crowd it out of the grasp of the instrument, whether the latter be curette, adenotome or forceps. The result is that frequently, if not constantly, remnants of the growth are left, especially on the lips of the Eustachian orifice, no matter how thoroughly the remaining area is cleared. These remnants are difficult or impossible of removal and are very often a source of great annoyance to patient and surgeon by forming into adhesions and masses of lymphoid tissue across and in the fossae of Rosenmüller.

The method which I use is designed to obviate this objection, and I believe does so. It is as follows:

First and foremost, the bare forefinger, aseptic, and with nail trimmed short, is inserted through the mouth into the naso-pharynx. It is passed up to the extreme superior angle of Rosenmüller's fossa and pressed to the full depth of the fossa. It is then swept firmly down throughout the whole length of the fossa, adhering closely to the Eustachian cushion. Without withdrawal the finger is then swung over to the other side and the procedure is repeated. The finger is then withdrawn. The adenoid growth is

now free from all attachments save its base on the naso-pharyngeal wall. A Gottstein curette of as large a size as can be inserted without injury to the Eustachian prominences is now passed up to engage the superior border of the growth, the palate retractor being used to expose as much of the field to view as possible. The curette, while being pressed firmly backward and upward, is shifted slightly from side to side, and wabbled sideways back and forth like a lever with an imaginary fulcrum about two inches from the distal end. (My distinguished friend, Dr. McReynolds, of Texas, very happily suggests that this movement might aptly be characterized as "The Gottstein Shimmie"). This engages the growth and forces it to bulge up through the fenestrum of the instrument, which is then swept down in the usual fashion, and the adenoid severed. The bare finger is again inserted to feel for any portions that may remain, as they frequently do on the lateral aspects of the field, and these are removed either with curette or punch forceps or both, sometimes under direct vision with the aid of the palate retractor, and sometimes by sense of touch.

It is very common, in luxuriant adenoid formations, to find masses of lymphoid tissue on the lateral walls below the Eustachian orifices and extending down behind and often upon the posterior faucial pillars. All of this should be carefully and thoroughly removed, and the punch forceps is most useful for the purpose.

As a finishing touch, to smooth the field and especially the fossae, the forefinger, this time well wrapped about with sterile gauze, is inserted into the naso-pharynx and, again, firmly swept through the fossae and over the entire operated field. Bleeding is controlled by pressure, and an application of compound tincture of benzoin is then made to the denuded area, care being taken again to go thoroughly into the fossae.

The feature of the operation is, of course, the preliminary breaking up of the adenoid attachments to the Eustachian orifices, thus permitting the free mechanical engagement of the mass in whatever instrument may be used for removal. The procedure is equally advantageous whether curette, adenotome or forceps, be the instrumental *pièce de resistance*. For myself, I prefer the curette.

CONTROL OF LUNG ABSCESS FOLLOWING TONSILLECTOMY AND RETROPHARYNGEAL ABSCESS. THE SUCTION DISSECTOR.*

Dr. Clifford B. Walker, Springfield, Mass.

There is a strong tendency in recent years to develop the quickest possible tonsil operation compatible with ordinary safety, and if the percentages of lung abscess, pneumonias, and hemorrhages are not seriously encroached upon, the fastest operation finds favor. Probably a large number of these unfavorable sequela are not reported. But even so, the number is not decreasing as it should be if more energy was devoted to safety-first methods, even at the expense of the time equation.

And so we find ever recurring articles drawing deserved attention to the relation of tonsillectomy to lung abscess, either by inhalation, or by lymphatic drainage and extension.

In the larger clinics, operators have been driven to the rapid easy methods almost in self-defense, and the more deliberate procedures have not been developed, or have not survived, nor has there been any middle ground. Having once developed the operation, it is made to serve on all cases alike. In any given clinic, one usually finds a certain type of operation excluding all others, or predominating to the exclusion of all others.

The physician who wishes to protect his patient from respiratory complications must insist that the larynx be kept clean, dry and visible throughout the operation without sacrificing any item of safety in any other respects.

Killian long ago demonstrated that this was practicable, and performed several tonsillectomies as side issues to the major subject he was working on at that time. However, it is not necessary to use the elaborate apparatus of Killian for this purpose. An ordinary mouth gag of Sewell type, will expose a sufficient amount of the larynx with the patient lying on the back, and without a pillow. The head need not be lowered, or even brought into the Rose position; though this position, in any emergency, is almost instantly obtainable at any time, by drawing the head over the end of the table. After the operation the patient is left to recover in the semi-prone, almost Sim's position.

Dr. Crowe of Johns Hopkins Hospital, has used the dorsal position of the patient in tonsillectomy, perhaps as extensively as any-

*Dr. Logan Clendening, "The Cause of Abscess of the Lung after Tonsillectomy," Journal of the A. M. A., April 3rd, 1920, p. 941.

one, having now in the neighborhood of two thousand cases, or possibly more, with no report of lung abscess, and using a similar method, I have done about half as many with no case of lung abscess or pneumonia reported.

Dr. Clendening, without mentioning anything in regard to the position of the patient, which we would emphasize as a matter of supreme importance, gives the motor-driven ether apparatus perhaps too much discredit. Of course an apparatus of such high pressure as he described which is able to balloon out the pharynx, inhibit respiration and cough, and even drive things down the larynx, should not be used, but rather a low pressure, which cannot, with the patient in the position described, blow anything toward the larynx, but is able merely to deliver ether vapor into the cavity of the mouth. The larynx is then not situated in the line of ether delivery, but rather at the uppermost part of the lower pharynx, where gravity will act to prevent the undesired circumstances, and tend to fulfill the requirements. In the sitting, semi-reclining, or even the usual lying position, Dr. Clendening's criticism is well taken and especially so in that there is a tendency for some etherizers to get a deeper anesthesia occasionally with automatic ether than with intermittent, or open ether. With deeper anesthesia, the larynx has less of its natural automatic protective ability, and if the patient is in the sitting position no suction apparatus will keep the larynx (below the field of operation) free from danger. It matters not whether the suction is continuous or that it gets 90 per cent of the material it will not get all of the material all of the time as is possible only in our favored position.

While it is true that motor-driven anesthesia may be abused and wrongly used, it is also true that it can be used in a manner entirely beyond criticism in this connection, and while I do not believe, as Dr. Clendening concludes, that the banishment of the motor-driven apparatus would solve the question for the time, I do believe that if the sitting position was abandoned, and such a position used that the larynx could be kept under visible control throughout the operation, as has been described, the occurrence of lung abscess and pneumonia would be reduced a great deal more than by the exclusion of motors.

But while we may have all this to say in connection with the ether operation, it must not be forgotten that among patients over fifteen years of age, there are many who are glad to escape all these difficulties by having the local operation, such as described by Mattheus, recently of the Mayo Clinic. With this operation, one may after sufficient experience practically guarantee a painless proced-

ure. Certainly this can be made of great advantage to those having pulmonary weakness, or a dislike for ether.

Aside from the direct or inspiration mechanism of lung abscess etiology, Dr. Clendening throws emphasis on the possibility of indirect extension from the tonsillar fossa by metastatic or lymphatic extension, and insists on the minimum of trauma to the tonsillar fossa, since there is evidently a close relation between the tonsil and lung abscess independent of all inspiratory possibility. This point is very well taken, indeed, since so many operations at the present time involve the deliberate and even prolonged crushing of the entire tonsillar fossa with instruments of great strength. Most of these are found among the various modifications of the guillotine type. But in general the trauma given to a fossa is usually the result of efforts to control bleeding. Bleeding is very largely proportional to the accuracy with which the dissection follows the more intimate tonsillar capsule, and at the same time preserves the more external capsule and covering of the muscle layers of the fossa.

Now having decided on the best position of the patient during the operation, how may we follow the inner capsule most closely? Because the tissues are under different tension and mobility in the described position than in any other position, we find that the ordinary procedures are not so satisfactory.

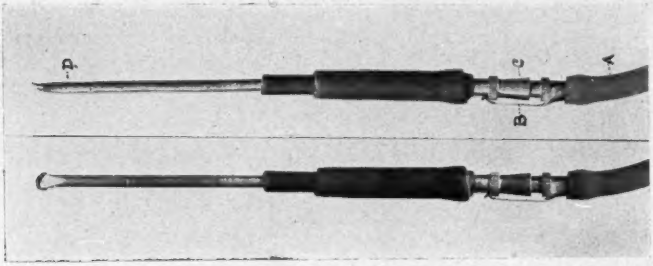
Accordingly, a new set of instruments was made, many of them being merely modifications to suit convenience, but one especially which I call a suction dissector (cf. fig.), I have come to rely on more and more, and since I have not seen a description of any similar device I will describe it briefly.

It is simply a thin walled steel tube of one-half cm. diameter and 18 cm. in length. This length is sufficient to directly clear the larynx by suction, of mucus, or any secretion which may appear in that region. The instrument may be rotated in the fingers by virtue of the slip joint at the end, which attaches to the suction apparatus. The other end or tip of the instrument is of great importance, and is made to serve as the dissector. After many modifications and curves, I find the tip shape such as shown in the figure the most satisfactory.

I have been using this device since December, 1918, with very little modification. After a shallow incision is made through the mucosa and down to the capsule inside the anterior pillar but close to the tonsil, the anterior pillar is retracted. A few strokes with the suction dissector then serves to identify the intimate layer of the tonsillar capsule, since an exceedingly clear field is continuously

maintained by suction. The tonsil now strips readily from above downward as Mattheus has described, closely following the capsule and avoiding injury to the deeper lying fossal structures, by actual observation.

The snare is applied when the dissection has been carried far enough down on the constrictor wall, so that the wire will unquestionably follow the capsule very closely. Bleeding points (though greatly reduced in number, as compared with any other method of dissection that I have tried in this position) are accurately clamped with minimum of trauma if they do become troublesome at any time. It is seldom necessary to use the clamp in children, but it is more commonly used in older individuals, and in these cases, after the hemostat has been in place a few minutes, no bleeding follows as a rule, when it is removed. Infrequently, however,



The Suction Dissector.
(A) Tube to suction apparatus. (B) Slip spring holding slip joint. (C) Free to rotate but not to separate. (D) Suction tip with modified fish tail shape and one lip longer than the other for dissection purposes.

it is necessary to place a suture in order to obtain the perfectly dry fossa demanded before the patient leaves the table.

I have been much pleased with the small percentage of bleeding I have had to contend with, since using this method of dissection under ether. In the last 400 cases I have not been called to the patient on account of bleeding, and only in three or four instances has the patient described any oozing. No instance of secondary hemorrhage has occurred. In 1,000 cases I have had no lung abscess or pneumonia. There may be a large element of luck, but I feel that the position used which permits a deliberate procedure with the larynx in the position of maximum safety together with the stripping method of dissection by use of the suction dissestor described, must be given much credit.

Then again in this position the tonsillar fossa forms a sort of a cup which will not look dry as it may in the sitting position, if

slight oozing is going on, so that doubtless just the cases that mgiht have given trouble, were forestalled at the operation. Further, in regard to secondary hemorrhages, it must be noted that the fossa may be very carefully examined after the operation, and if an exposed but uncut vessel is seen to be lying in the fossa, it may be taken care of with sutures, as a preventive measure in case of later sloughing.

Retro-pharyngeal abscess, though not a frequent occurrence, is well known to be potentially able to produce lung abscess, pneumonia, or even asphyxiation as a result of incision and drainage as well as the result of spontaneous rupture. This condition usually occurs in small children who are already pretty well run down by an infectious disease, toxic absorption, and limited respiration. I wish especially to recommend the suction dissector, in dealing with these cases, used with the patient in the position described when operating. On April 8, 1920, I used this instrument very successfully on a retro-pharyngeal abscess in a one-year-old child, without any preliminary knife incision at all. The tip of the dissection tube was sharp enough to enter the abscess cavity in the mid-line, and 4 ounces of clear pus was removed without even soiling the mouth, since the first gush of pus went directly into the suction apparatus. I think anyone who uses this method in dealing with these cases will be extremely well pleased.

CONCLUSIONS.

1. Lung abscess and pneumonia following tonsillectomy can be made an exceedingly rare occurrence, if a position is used during the operation, such that the larynx may be maintained absolutely clean and free of material during the entire procedure, and until the patient is sufficiently out of ether to be able to maintain normal protection.

2. Suction when applied constantly through the instrument of dissection renders a startling improvement in the accuracy with which the dissection may be kept in the plane of minimum vascularization.

3. This improvement in dissection contributes a corresponding improvement in the percentage of bleeding.

4. Automatic or power driven anesthesia apparatus, when properly used, can be made to contribute materially toward a very high standard of work.

5. The local tonsil operation will doubtlessly be used more and more extensively and lung abscess in adults will correspondingly decrease in tonsillectomy cases.

TONSIL FACTS.

DR. THOMAS M. STEWART, Cincinnati, Ohio.

In an article by the author published in the *New York Medical Journal*, January 4, 1919, on high frequency electric currents in the treatment of enlarged or diseased tonsils in comparison with the results of cutting operations, data was compiled and published on 13,329 tonsil operations. The data referred to was in agreement, in the main, with the report of the Johns Hopkins Hospital in Baltimore.

A resume of the author's conclusions are as follows:

1. That the tonsil operation does not insure against future attacks of sore throat, nor of other diseases and infections for which the operation is done.

2. That tonsil tissue is present in nearly one-half of the cases after operation, not always to the detriment of the patient nor a reflection upon the operator.

3. That the new electric treatment, or fulguration by means of the high frequency current, secures reduction in the size of the tonsil in over 75 per cent of cases by causing a shrinking in the tonsil with healthy instead of diseased tissues as a result; no risk to the voice, and of course no danger of shock, hemorrhage or death.

Since the aforementioned article was published 175 letters have been sent out to patients who have undergone the new tonsil treatment and replies received from all but fifteen. Of the 160 cases remaining eight were operated on. All of the others (152) report freedom from throat and general trouble, and the cases run back three years.

The use of the high frequency electric current is not by any means restricted to tonsil, goitre, prostatic and nasal work, as the following quotation from the September, 1918, issue of the *American Journal of Electro-Therapeutics and Radiology* will show. It is taken from the "Report of the committee upon new surgical uses of high frequency currents with special reference to the treatment of surgical tonsils and hemorrhoids by the desiccation method," of which committee W. L. Clark, M.D., Chief of the Electro-Therapeutic Clinic, Jefferson Hospital, Philadelphia, Pa., is chairman. His statement is as follows:

"High frequency currents continue to play an important role in the field of surgery. It has hitherto been demonstrated that the desiccation method is ideal for the treatment of benign lesions of cutaneous surfaces, mucous membranes (including growths in the bladder), cartilaginous and osseous structures; among which may be mentioned papillomas, veruccae, chondromas, exostoses, moles, vascular and pigmented naevi, urethral caruncles, tattoo marks, powder marks, etc., also for localized malignant lesions, both from a curative and cosmetic standpoint. More recently other important surgical uses have been found for these currents, and the results obtained have *gone even beyond expectations.* The more important of these is the treatment of surgical tonsils and hemorrhoids by the desiccation method, and the destruction of large malignant lesions by electro-coagulation, even with extensive bone involvement; while in some instances the value is increased when used in conjunction with operative surgery, X-ray and radium. Among the anatomical locations of cancer now treated by intensive high frequency currents may be mentioned the oral cavity, including bony structures, antrum, pharynx, esophagus, breast, bladder, uterus and rectum. It seems practical to treat malignant lesions of abdominal organs after laparotomy by these methods. This has not been undertaken as yet, except in the bladder after supra-pubic cystotomy, but preliminary animal experimentation has already been undertaken with the view of determining the possibilities of the electro-thermic methods in the abdominal cavity."

The foregoing statement will serve to establish the value of the high frequency current, and aid those to whom these matters are familiar, to respect an agent capable of accomplishing curative results in so wide a range of lesions.

Infection from the tonsil does not mean removal of the gland. Dr. William Martin of Atlantic City says, "The tonsils play a part in infections, and all tonsils with 'pockets' should receive attention. By this is not necessarily meant their removal, for many cases can be relieved by slitting and drainage."

Errors in diet have produced the exact clinical picture as seen in some infections, and correction of dietic errors has been followed by a complete cure, and again, too, little attention is paid to the after results of operation. Dr. A. Jacobi, the nestor of American medicine, says: "Only one in twenty operations on the nose for instance will prove beneficial," which simply means that cases should be selected more carefully and more attention paid to pre-

paratory as well as to after treatment in order to secure better results from operation.

When the people learn that a gradually increasing number of physicians are becoming experts in the treatment and prevention of disease by physiological means rather than invariably by operation, then the recurrence of disease will be lessened.

Opinions are often complacently announced as if they were proven facts; witness the following opinion of the late Edward Pynchon, M.D.: "For all the conditions enumerated and dependent upon enlarged and diseased tonsils, a positive cure can be guaranteed.

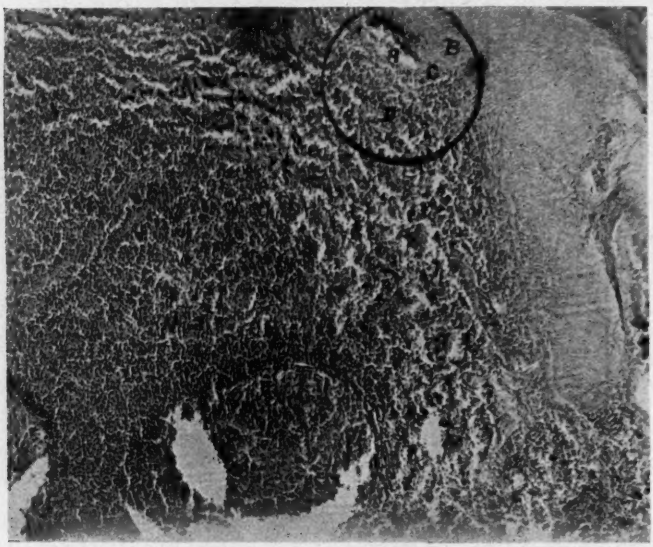


Fig. 1. The small circle shows the tonsil section under low power, and indicates the same area on Fig. 2 which is a high power magnification.

The only rational treatment is surgical, that is the total excision of all tonsil tissue."

That is a flat contradiction of almost all of the conclusions of the study made of tonsil cases a year and more *after* operation by the Johns Hopkins' surgeons; instead of a positive cure can be guaranteed," the Johns Hopkins report states:

"The very diseases for which tonsil and adenoid operations are performed may and do recur after the nose and throat have been put in normal condition.

"In any event the tonsils are not the only gateway for disease germs to gain entrance into the system.

"Tonsil treatment alone will not cure tubercular glands, rheumatic joints, nor kidney inflammation."

To which we might add that 40 per cent of cases after recovery from the tonsil operation are just as liable to sore throat as before operation, because of diseased follicles in the pharyngeal wall, and these cases constitute a fairly large per cent of cases best cured by fulguration.

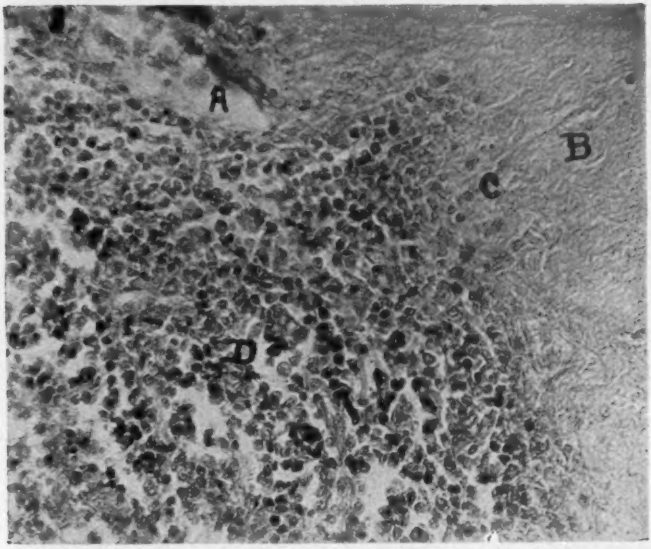


Fig. 2. The area indicated by "A," indicates a blood-vessel; "B," white fibrous connective tissue; "C," area of infiltrated leukocytes and numerous spindle shaped cells which will later become fibrous tissue; "D," an area of cells undergoing degeneration and infiltrated leukocytes.

Fifty-five per cent have some tonsil tissue left in the throat, acting just as much as a cause of trouble as if the operation had never been done.

Fifty-eight per cent still have mouth breathing.

All of which means that too much is claimed for tonsillectomy, simply because patients are operated on and that is the end of the matter, it would seem, insofar as most surgeons are concerned.

We seem to forget that deaths do not occur from tonsil disease, but that many die from tonsil operations. This means that tonsil

operations are always dangerous. There is a large network of lymphoid tissue in the fauces, in the pharynx, and in the post-nasal space aside from the tonsil, and care in diet and the amount of drinking water are of equal importance with other means in tonsil treatment.

In the *Archives of Pediatrics*, July, 1906, Dr. A. Jacobi says: "Exposure and many diseases change the surface and the structure of the tonsils. Cell infiltration and cicatricial tissue render absorption less possible. Blood and lymph vessels undergo atrophy. That is why in advanced life the tonsil gets harder and smaller *and infections become less.*"

This, it seems to me, is just exactly what is accomplished by high frequency fulguration in the new surgical use of it in tonsil cases needing treatment.

In support of this statement the microphotograph shows what the high frequency current does to tonsil tissue. The tonsils were removed from a patient in whom fulguration had reduced them to one-half their former size. On account of the patient going away to school the operation was done because of lack of time for further high frequency treatment.

I quote from the report of Dr. Fletcher Langdon, Clinical Director of the Langdon-Meyer Laboratories of Cincinnati.

"These specimens are very much like the so-called normal tonsil. There is no special atrophy of the blood and lymph vessels, there is plenty of cicatricial tissue but it runs in the septa and not on the surface; the epithelial layer is about as usual, being more or less invaded by leukocytes, and in these areas there is some degeneration of the surrounding epithelia." These latter are the areas last fulgurated prior to the operation of removal of the tonsils.

Union Trust Bldg., Cincinnati, Ohio.

VOICE AND SPEECH, A NEGLECTED MEDICAL STUDY.

DR. JOHN J. LEVBARG, New York.

It may be frankly acknowledged that although we have many excellent specialists and operators in America, we have as yet no definite class of physicians for the proper care and treatment of the human voice.

Through the gradual growth of an appreciation of talented voices, the time is not far distant when we may hope for a truly individual class of physicians, specializing in voice only, just as we have orthopedic specialists, otologists, etc.

The proper care of the voice is a very interesting study and important branch of medicine, but instead of the laryngologist devoting more attention to its importance, it seems to have been allotted to the care of vocal instructors, the majority of whom are absolutely ignorant of the fundamental principles of anatomy, physiology and hygiene of the voice.

In order that such a distinct class of specialists be formed, our post-graduate schools should pay more attention to this important branch of laryngology; in fact, should give as much attention to the proper use and care of the voice as they are giving to bronchoscopy.

In New York City alone we have over 200,000 vocal and speech students, and over 15,000 vocal instructors; this forms such a large percentage of the population that it is shameful that their care should be in the hands of the laity, the majority of whom are using destructive methods and are spoilers of good and promising voices. This misfortune is due to the neglect and disinterestedness upon the part of our medical and post-graduate schools.

Not alone are the vocal instructors spoilers of good voices, but the majority of our so-called nose and throat specialists can be placed in the same category.

I have come in contact with a great many laryngologists and when the subject of vocalism is brought up, the majority do not understand the fundamental principles of voice production, and yet they undertake to treat singers.

They do not seem to know that the voice is produced by the vibrations of the vocal cords due to the expiratory blast of air emitted from the lungs, and the quality is reinforced by the resonating chambers, which are the cavities of the head. The majority believe that the quality is due to the vibrations of the vocal bands. If the specialist would realize that the quality is due to the reinforcement of the vibrations in the accessory cavities, there would be less oper-

ative interference, with the result that a good many promising voices will be spared from unjust ruination. It is true, I admit, a great many need operative interference, but the majority can and ought to be let alone. For example, let us take plain hoarseness—a problem confronting the laryngologist, who deals with singers, speakers and those who depend for a livelihood solely upon the use of their voice. There are many causes producing this condition, but the paramount and chief cause is a faulty method of attack. The faulty attack usually causes the lining of the vocal apparatus to become congested and finally produces a degeneration of the mucous membrane, with hypertrophy of the glandular tissues and also produces enlarged lingual veins. In most instances upon examination you will find permanent changes in the deeper tissues of the pharynx, also an alteration in the secretion, thereby resulting in a difficulty in using the pharyngeal muscles; this causes the constant and persistent symptoms of hoarseness and an irritating cough.

Improper breathing and lack of knowledge of the proper method of attack causes the singer or speaker to use his muscles of phonation and the muscles of articulation incorrectly, thus causing an overtaxation of the laryngeal and pharyngeal structure. Due to this increased action of the muscles, there is a great increase in the blood supply and if persisted in marked changes in the deeper tissues occur, which finally lead to a relaxation of the walls.

Most of the throat specialists believe that the enlarged linguals and tissue changes are the cause and not the result—go right ahead and operate, instead of using expectant treatment. Result—impairment of a probably good voice.

If the physician were properly trained, he would first examine his patient's voice with a few scales or have him sing or recite a simple piece, so that the physician would become acquainted with his patient's method of intonation and attack, in order that he be put on the right road for the correct carrying out of his treatment. This should be done before examining the patient's nose and throat for any pathological conditions; by adopting this method a good many tonsils, turbinates, etc., will be spared.

I have an opera singer who comes for treatment from time to time, 60 years of age, possessing a very good, robust tenor voice. This gentleman has had an enlarged left angiomatous tonsil since birth, which does not interfere with his tone production. His hoarseness is usually due to climatic changes and not to his pathological growth.

In order that the nose and throat specialist be properly trained in the proper production of the voice, the post-medical schools

teaching laryngology should also devote some time to instruct their students on this important subject.

The human voice is one of nature's noblest gifts, and when properly understood and produced is far superior to any musical instrument.

Again I repeat that this subject, which has been grossly neglected, is even more important than bronchoscopy, which is an emergency operation and not so frequently encountered in our daily practice as defects in voice and speech.

The post-graduate schools should adopt this branch of laryngology and teach it systematically.

The following program I would suggest for adoption:

A. The anatomy and physiology of the vocal apparatus, including the diaphragm and the cavities of the head.

B. The mechanism and physiology of correct respiration in voice production.

C. The principles of resonance and quality.

D. Classification of the voice.

E. Hygiene and care of the voice.

F. Audition—in voice production.

G. Affections of voice in singers and speakers.

H. Treatment in general.

I trust there will be a time when the medical profession will be awakened to the fact that intelligent practitioners alone should treat singers and speakers medicinally.

I hope the time will come when they will realize that the requisites are an intimate acquaintance with the fundamental principles of vocalism and a good knowledge of medicine, together with an accurate knowledge of the anatomy, physiology and hygiene of the human vocal apparatus. Indeed, every physician graduting in this enlightened age should know the general principles of vocalism and correct speech, so that he may be able to instruct his patient intelligently, when and how he should take care of his voice. Every patient has a moral right to expect that his particular doctor shall be able to tell him what to do. The great trouble is that the average physician and specialist knows absolutely nothing about the production and mechanism of vocalism, and so cannot advise his patient in an intelligent manner. The result is only too lamentable, for the unfortunate singer or speaker often drifts from one specialist to another, until he falls into the hands of some charlatan or faker, who advises anything, whether indicated or not, as long as the fees are forthcoming.

1425 Madison Avenue.

FLUOROSCOPIC BRONCHOSCOPY, ESOPHAGOSCOPY AND GASTROSCOPY.*

DR. R. C. LYNCH, New Orleans, La.

It would seem almost necessary to apologize to this society for the presentation of a subject in which practically all of the members are so well versed; and yet, if we do not exchange our experiences in every phase of this work, it will be ever so much longer before our procedures are sufficiently standardized to permit the less experienced to proceed without experimentation. I have selected fluoroscopic tube work for my text with the relation of a few instances in which it was apparently impossible to proceed except for the valuable information and guidance as furnished by the fluoroscopic tube work and by the X-ray plate, both of which you are familiar with.

In 1913 I described my first experience of fluoroscopic bronchoscopy with extraction of a nail low down in one of the terminal bronchi of the stem to the lower lobe on the right side, and this at least was one of the first case reports of this technique.

During the last two years I have had several occasions to use this combination for the successful removal of foreign bodies from the lungs, and I have employed it in one esophagus case and in two stomach cases; these form the basis of this report.

The bronchus cases were four in number, all of long retained foreign bodies in which, as is usual particularly with metallic substances, worked their way to as near the periphery as space would permit, and when the final destination was reached, began the slow destruction of surrounding tissue with abscess formation; then, nature's effort to stop this process resulted in a thick walled abscess cavity being formed, in which state I found each of the four cases.

A little boy playing doctor with his little friend was gagged by the brushing of the posterior pharynx with the head of a millet grass bloom, all of which broke off and was insufflated into the trachea and down into the depths of the right bronchus. Procrastination, ill advice, tuberculosis, sepsis, followed in the usual history of such cases until finally after two and a half years it was decided to consult someone who might possibly do something. The little fellow was deep in the throes of a profound sepsis, temperature,

*Read before the American Laryngological Association in Boston, May 28, 1920.

emaciation, toxemia, with an abscess between the fifth and eighth ribs in the position represented by the very terminal bronchi from the main stem to the lower lobe of the right lung. The cavity measured nearly three inches in its diameter, and of course the foreign body was unable to be seen either on the screen or plate. He was too weak to permit much anesthesia, so we proceeded on the first attempt without this. The bronchus was found to be closed by granulation tissue, but a small trickle of pus could be seen coming from between the papilae at the bottom of the tube. After adrenalin had shrunk these, they were bitten away and finally with a small steel wire feeler or probe, I entered the abscess cavity and made the attempt to dilate the neck of the cavity, using a stout jawed forceps introducing these closed and extracting them opened. By this means about two ounces of pus was removed by suction and this was thought sufficient for this sitting.

Period two consisted in using a smaller tube and the fluoroscope to guide the forceps through what seemed like three quarters of an inch of granulation tissue to the cavity and when entered the fluoroscope determined the presence of the forceps in the cavity without doubt. We then tried the flexible end right angle forceps of Jackson and searched the upper half of the cavity very carefully and finally succeeded in removing what seemed like about one third of the grass head and again draining the cavity of pus. After this the general symptoms improved for a while, but it was not for long. A third attempt was made to clean the cavity and drain the abscess, but failed. The child went home and an external opening was made which removed the remaining two thirds of the grass head, but the sepsis was so pronounced that the little fellow finally yielded to the battle and died.

A screw was inhaled four years previously and like the histories of these cases, came finally under observation, abscess about two inches in diameter with fairly thick walls and beginning sepsis. On the first examination the bronchus was found entirely closed, but after picking and dilating, I finally managed to uncover a path which led into the abscess cavity and guided it to come in contact with the screw; a small forceps previously made to fit this tube was now inserted, its jaws opened and these were seen to grasp the foreign body and I could feel them take hold. We continued to watch the extraction of the tube, screw, and forceps until the foreign body was finally delivered out of the body; this, by the way, is especially advantageous in case the forceps should slip and the body lost, it could still be under observation by the fluoroscope. While it did

not happen in either case, it has before, and can be guarded against in this way.

The third case of an upholstery tack in about the same position, worked about the same way and was successfully removed.

A wire fence staple in the left bronchus was assisted in its removal by fluoroscopic means in that the staple was point up when the intervening tissue was cut away to permit the mass to be removed; it was thought best to turn the staple in the trachea and bring it out by the blunt end first, so that when it was dislodged and brought into the trachea, the fluoroscope kept constant watch until it was turned, grasped, and delivered by its blunt end out of the body. One reads so frequently of a partial delivery and subsequent loss of a foreign body, and this I have had, too, so in this case I determined to guard if possible against this occurrence. The staple had been in situ nine years and was decidedly corroded, and I was fearful lest I should break it in its removal or leave some fragments behind. The fluoroscope was very comforting in determining the entire removal of the mass, and the boy made an uneventful recovery.

A little girl swallowed lye about five years before, and in due time had a stricture of the esophagus, which finally closed and necessitated a gastrostomy for feeding by which nutrition had been maintained, but as the youngster grew and began to go to school, she and her parents became more than anxious to reestablish feeding by normal route. Esophagoscopy determined an impermiable stricture one and a quarter inches below the cricoid. An attempt was made to do a retrograde dilatation by an opening through the stomach, and when the bougie was in place the fluoroscope displayed about an inch separation between the esophagoscope above and the dilator below. Looking at the two points in two diameters, it was thought that they were in a straight line, and an attempt was made to dissect through the stricture. I cut through about an inch of tissue and could not reach it with the knife. As the patient was not doing so well, we stopped the procedure for a later session. All went well until the fifth day, when the little girl drank nearly a bottle of Coca-cola, and I am not sure if that is all she had, for her mother, who was with her, could not resist the temptation to feed her even though everything by mouth was absolutely forbidden. She developed a mediastinitis with fluid in the right pleural cavity and died. We could not secure permission for a post mortem.

A baby of two years swallowed a quarter which slipped into the stomach, where it lay for two weeks. The fluoroscope determined

that it was probably nearer the greater curvature but toward the pytous. A scope was passed into the stomach, and after moving the patient on the side and then on the back, we finally placed the tube over the body and removed it.

In a baby with an open safety pin in the stomach, the same procedure was tried, but after seven minutes' search by watch, we were unable to find the pin. All was in readiness to do a gastrostomy, and Dr. Urban Maes removed the pin through the smallest of incisions and in fifteen minutes the baby was closed up and ready to return to the room. She made an uneventful recovery.

Fluoroscopic bronchoscopy is of the greatest value and aid in the successful removal of long-retained foreign bodies of an opaque sort from the bronchi or abscess cavities, and it likewise helps to guide one to the site of abscess even when the foreign body cannot be seen. It will help in selected cases in the gastroscopic cases, and I am sure someone will report its successful assistance in re-establishing a pathway in an impermiable stricture of the esophagus in a more favorable case than the one which I have just reported.

INFECTIONS FOLLOWING OPERATIONS OF THE NOSE AND THROAT.*

DR. HUGO KUNZ, New York.

Infected foci, following operations of the nose and throat and lodging in other regions are of sufficiently frequent occurrence to demand more than passing note. The oral and nasal cavities are obviously difficult areas to keep clean after operation, and infections therefrom run their course unabated and unchecked. Tonsil operations, both in children and adults, and especially where accompanied by severe traumatism, are prone to cause painful and foul ulcerations of the adjacent tissues, such as the fauces, soft palate, and uvula. Adenitis, involving the chain of glands anterior to the sterno-cleito muscle and under the ramus of the jaw, are of frequent occurrence, sometimes remaining painful and enlarged long after the operation. Purulent otitis, with its possible mastoid complications, the very condition we are trying to forestall by the removal of adenoids and tonsils, occur sufficiently often as a sequel

*Read at the New York Harlem Medical Association, April 14, 1920.

to tonsillectomy, thus forcing us to pause and consider before doing this operation, trivial though it may be.

Intra-nasal operations, more especially the submucous resection of the septum, has been followed by even more disastrous results such as inflammation of the sinuses, meningitis and death. Tonsillitis and otitic complications are common sequelae after septal operations and occur in the experience of every surgeon doing nasal surgery in spite of strict antiseptic precautions. It is, therefore, incumbent upon us not to needlessly and wantonly jeopardize the health and lives of those seeking relief at our hands by doing this operation indiscriminately, but to practically consider each individual case and its phases and endeavor to determine whether a submucous resection is required.

In the absence of sinus inflammation or nasal obstruction the presence of a septal deflection or deformity does not warrant a submucous operation. The operator should find other causative factors besides a deflected septum which may be responsible for the symptoms complained of. Frequently a minor operation such as the removal of adenoids which are often overlooked in the adult, or the snaring of the enlarged posterior ends of the inferior turbinates may be all that is necessary to produce relief. So also the presence of tonsils in children in the absence of mouth breathing, chronic inflammation, or other definite etiological factors does not call for their ablation. Here, as well, the removal of the adenoids alone is all that is required to relieve obstructive symptoms which are present. However, if tonsillectomy be imperative, let us select the operation accompanied by the minimum amount of trauma, thereby eliminating and preventing infection as much as possible. In children who have just recovered from an acute illness, or in those who are anemic and run down, tonsil operations should be postponed and the child's general condition improved as infection in them is more liable to occur. As regards the sub-mucous resection cases, let us make sure that the operation is imperative before attempting it, and, if infection does unfortunately follow, we may have the comforting assurance that the operation was not unnecessarily done.

640 Riverside Drive.

DIFFICULTIES ENCOUNTERED IN REMOVING A PEANUT FROM A BRONCHUS.

Dr. Wm. B. Chamberlin, Cleveland, O.

On the afternoon of November 21, John C., aged 4, was playing with his brothers and sisters, who were considerably older. His mother had gone out for the afternoon and left him in charge of his nurse. There was a dish of salted peanuts on the table, from which the children and the nurse were eating. The older children were tossing up the peanuts and catching them in their mouths. The nurse conceived the idea of tossing the peanuts to John to see if he could catch them in his mouth. Her success was attested by a violent fit of coughing on John's part, succeeded by a very marked dyspnea. A messenger dispatched in haste to the mother announced that "John was still alive." The above occurred about 3:30 p. m. At 5:00 p. m., at Lakeside Hospital, John was not coughing, but the breathing was quite labored, with a distinct limitation of motion on the left side of the chest, together with an almost complete absence of breath sounds. There was no cyanosis.

With no anesthesia the second size Jackson bronchoscope was introduced into the left lung, where a half peanut was encountered completely plugging the bronchus. Attempts to grasp the end with the blunt tipped, or bean forceps, were unsuccessful and only pushed the peanut more firmly into the bronchus. The double tenaculum brought away only as much of the nut as was included in its bite. A wire with tip bent at a right angle for one-eighth inch partially dislodged the offender but when the blunt forceps were substituted the old difficulty was again encountered. So the bent wire and double tenaculum were used in combination and succession with an occasional withdrawing of the scope, when it was thought or hoped that the entire nut might be in the grasp of the forceps and against the end of the tube. No such good fortune, however, attended the operation, so the scope was reintroduced and the peanut removed piecemeal until it was thought that no more pieces remained. The operation consumed something less than an hour, the child leaving the table in good condition. The following day there was slight elevation of temperature and a rather marked dyspnea with considerable retraction of the suprasternal notch. The temperature became normal on the day following but the dyspnea continued, so that intubation or tracheotomy were considered. Chest examination

showed air apparently passing to all parts of the lung. X-ray examination was negative. The dyspnea gradually subsided, the child leaving the hospital on the morning of the eighth day.

A succession of thoughts ran through my mind during this operation, just as they have run through yours under similar circumstances. They have been running through my mind occasionally since. Whether the outcome be successful or not, I believe the conscientious operator is wont to analyze his operative procedure. So the hope that a group analysis may be mutually helpful is my apology for presenting the following points for discussion.

My object in reporting the foregoing case is not to recite a tale of personal achievement. I should not have reported it as willingly if the outcome had been unfavorable. Such cases are among the most difficult technically with which the bronchoscopist has to deal. His decisions must be immediate and final. The bronchoscopic experience of any one of us in foreign body work is limited and fragmentary. It is only from the composite experience of a fairly large group of men that wide experience and certain underlying principles can be gained. So it is only in the hope of bringing forth a most general discussion that the case has been presented. With your permission, therefore, I should like to suggest the subjects which occur to me as vital.

1. *Physical Examination.* How far can physical signs tell whether or not a foreign body is present? If its presence is determined, how far can they guide us in determining where the foreign body is located? By physical signs I mean those elicited by a competent internist accustomed to making a physical examination—not the amateurish physical findings of the bronchoscopist, who, in my opinion, is about as capable of making and interpreting a chest examination as the internist is of performing a bronchoscopy.

In a case some years ago of foreign body, an English walnut kernel in the right bronchus, there were rales of similar character on both sides of the chest and the breath sounds on the two sides were practically identical. There was no dyspnea and the examination was made largely as a result of the history.

In another case, a watermelon seed in the trachea, the breath sounds were normal. The history was even questioned. A sudden coughing attack while the child was on the table lodged the foreign body firmly against the under surface of the vocal cords with a resulting dyspnea which almost proved fatal. In these two cases examination and removal of the foreign body was accomplished under general anesthesia. The outcome was successful in each.

2. *X-ray.* When the foreign body is impervious, the value of an X-ray is undoubted. In such cases, however, it is often misleading. The interval between the X-ray picture and the bronchoscopic examination affords abundant opportunity for migration. In certain cases the search for the foreign body under fluroscopic guidance has proven helpful. This, however, calls for extensive and special equipment, which is not always available.

When the foreign body casts no shadow, will it show a collapsed lung as a result of the complete plugging of the bronchus or a dilated and ballooned lung, with a lowering of the diaphragm on the involved side, due to the valve-like action of the foreign body in allowing the air to enter but effectually preventing its escape?

3. *Anesthesia.* Shall a general anesthetic ever be used? Jackson says that it shall not. Other capable observers do not agree with this dictum. This is a decision which is of immediate and vital importance, and one which must be immediately met. Given a husky and vigorous youngster, an immediate operation demanded and a bronchoscopist of little, or fairly limited experience, is the outlook better with a general anesthetic or with no anesthetic at all? My earlier cases were operated upon under general anesthesia. My tendency has been to use an anesthetic less and less as my experience has increased.

4. *Tracheotomy at Time of Operation.* The value of this procedure was emphasized at the recent meeting of the section of the American Medical Association. As a means of entering the respiratory tree it is rarely, if ever, necessary. In case the first search for the foreign body is unsuccessful and a second attempt must be made, its value is oftentimes unquestioned. An opening directly into the trachea allows easier entrance and egress for the air stream. Above all, where the foreign body is still present, it permits the getting rid of troublesome secretion with far less effort on the part of the patient. In a recent case, a navy bean migrating from trachea into one bronchus and then into the other, a tracheotomy undoubtedly saved the patient's life. The bean was subsequently removed from immediately below the vocal cords.

5. *Tracheotomy vs. Intubation* for laryngeal edema *subsequent* to the operation. Jackson says an intubation tube should never be used. This method has proven successful in my hands in several cases. In none was tracheotomy resorted to. One case was intubated over a period of three weeks. Certainly, an intubation is less shock to the patient, it is more quickly performed and above all the danger of subsequent bleeding into the trachea and lung is obviated.

It necessitates, however, the presence in the hospital of a competent assistant, in case the tube is coughed out or a tracheotomy becomes immediately necessary. Certainly, if in addition to the laryngeal edema there is an abundance of secretion, tracheotomy would be the operation of choice.

6. *Subsequent to the* bronchoscopy *when* should tracheotomy or intubation be performed? Here again is a vital decision. In my opinion, it should be performed early rather than late. I almost said "too early" rather than "too late." Labored respiration rapidly depletes a child's strength. Often this has already been markedly encroached upon by its struggles at the time of operation. It is a mistake to wait until there are evidences of cyanosis. Unnecessary delay means the loss of the golden opportunity.

7. *How long* shall the examination be continued? Some operators have a fixed rule in this regard and continue the examination under no circumstances for over twenty or thirty minutes. Given a patient in good condition at the end of such a period, the removal, or complete removal, of the foreign body being unsuccessful, is it wise to continue the examination longer, or to defer it until a subsequent day? Few operators wish to acknowledge defeat and frequently a search is pursued, oblivious to the passage of time and often with disastrous results to the patient. In the case in question the search was conducted for nearly, if not quite an hour, an extended period as all will agree. Yet it seemed wise to continue the examination at the first sitting rather than to defer it with the inevitably resulting inflammation from a foreign body, the irritating properties of which are so well known.

8. What form of *instrumentation* is best suited to such cases? In this, as in previous cases, the bent wire adapted at the time of operation to suit the exigencies of the case proved of value in loosening the peanut from its impacted position. It proved insufficient, however, for extraction. It was impossible to insert the blades of the ordinary grasping forceps, between the foreign body and the wall of the bronchus, any attempt resulting in pushing the peanut further down. The double tenaculum finally resorted to was only successful in removing the offender piecemeal—certainly a dangerous procedure, inasmuch as it afforded opportunity for the aspiration of the finer particles further downward into the smaller bronchi, whence removal might be impossible.

The foregoing occur to the writer as being the more important problems which confront the operator in cases of this sort. If their presentation shall provoke a general discussion, he will feel justified and possibly pardoned for presenting them so in detail.

A NEW BRONCHOSCOPE.

Dr. A. E. Goodloe, Chattanooga, Tenn.

This instrument was desired because of the failures and difficulties met with in the removal of foreign bodies from the trachea and deep bronchi, by the direct method, with any bronchoscope which is to be had today. I summed up the causes of most of the failures due to one or a combination of the following difficulties encountered in the work:

1. The difficulty of seeing a foreign body at the distal end of the tube, when there is a wobbling forcep carrier in the lumen of the bronchoscope, not only getting between the eye of the operator and the object, but casting shadows. This occurs, whether a tube with the light at the distal end is used, or one where the light is reflected from the proximal end.

2. It is difficult to know when the forcep is grasping the object, as the forcep is obscuring the view at the time of grasping.

3. If a tube with the light at the distal end is used, secretions cloud the light. I have been unable to get a tube that would remove these secretions, until the end of tube was completely filled.

4. The difficulty of finding the proper forcep to fit the body to be removed.

5. Inability to get the forcep to slide by the object, and the danger of pushing it further down.

6. Almost all forceps made to operate through the tube are necessarily small or pointed, and dangerous, especially when clear vision is not had.

7. "By substituting a small knife for the forcep or jaw, we have an arrangement whereby abscesses may be lanced under guidance of the eye or strictures may be divided. By inserting a metal mirror instead of the movable jaw, we have a most convenient tilting mirror whereby the sides of the bronchi as well as for a distance into the lumen of small bronchi entering at right angles to that containing the instrument, may be examined."

In the instrument here described, the above objectionable features are practically eliminated at one stroke with no objec-

tionable feature substituted. A combined bronchoscope and forcep that if the proper tube is selected (according to age) will grasp and hold, practically, any object, any size or any shape which may be lodged within the lumen of the bronchi, and at the same time vision is had through the tube at all times whether the forceps is closed, being opened, or open and it can be seen whether or not the object is within the grasp of the forcep, as the forcep is never between the object and the light.

The instrument is operated with one hand.

The tension of the grasp of the foreign body is transmitted to the sense of touch at the fingerpiece.

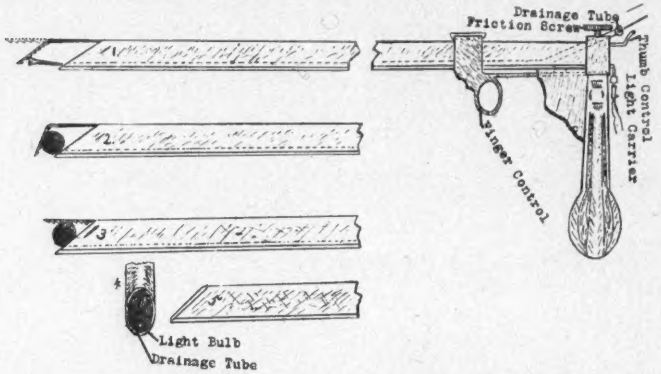


Fig. 1. Forcep, after being opened, passed over the screw, and closed down beyond the distal end, thus closing up the lumen of the tube, and ready to drag the object into the barrel. Forcep is never between object and line of vision. Dotted line shows position of forcep, as it passed over the object.

Fig. 2. Representing action of forcep on a foreign body, of a different shape, as a hard, round glass ball or bullet.

Fig. 3. Position of forcep and object, the same as in Fig. 2, after it has been rolled into the mouth of the barrel, and ready to be withdrawn.

Fig. 4. Showing end of instrument, with forcep closed and conforming to shape and size, also the thickness of the walls of the barrel, and showing the relation of the suction tube, to the light bulb.

Fig. 5. Showing side view of the end of barrel, with forcep closed.

There is less danger of the foreign body being pushed further down into the bronchus, as there is just half the space being taken between the object and the wall of the bronchi and also due to it passing the object, parallel to the wall of the tube.

There is little danger of penetrating the tissue, due to the size and shape of the forcep, the sense of touch and resistance, and of good vision.

The relation of light and drainage tube insures the best drainage possible, due to the mechanical arrangement. The secretion is sucked up before it reaches the light.

The size of the standard tube has not been to an appreciable extent increased, or the lumen decreased, therefore, if occasion should arise whereby the operator should wish to use forceps or other instruments through the bronchoscope, he can do so in the usual way.

The power of the grasping forcep can be so regulated, that any degree of tension on the object can be obtained, by simply regulating the friction screw at head of barrel. This is a very desirable feature in case of foreign bodies of protein composition, as the peanut, which we would wish to remove without crushing. In this case we simply release the friction screw until just sufficient amount of friction is obtained, when the object is grasped, the forcep is gradually elevated as the object is rolled into the barrel, as in Fig. 3.

In case of impacted bodies or where due to long and continued irritation, it has become covered with granulation tissue, the forcep serves as a curette, as it can be projected to any depth and a simple up and down motion is obtained which serves as a curette and the process can be watched until the foreign body comes into view.

It would appear to the casual observer, when looking at Fig. 4, that a foreign body, round and small, would not be grasped and would be lost through the opening in the forcep. This, however, is not the case, as a trial will convince, and, however, if this should be the case, if the body would roll out one way, it certainly would roll back the other, hence we would simply lower the proximal end and allow the object to roll out. The forcep and whole mechanism, seems to adapt itself to most any environment, and appeals to the originator as supplying a long-felt want.

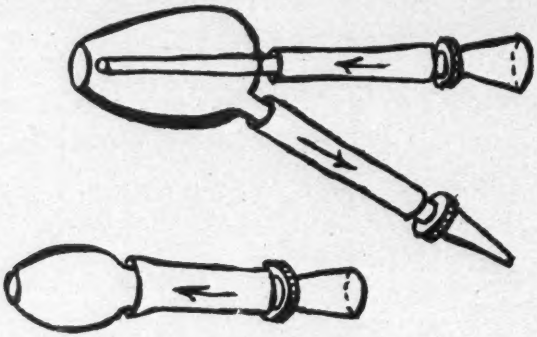
522 James Building.

STERILIZATION FOR ATOMIZERS, ETC.

DR. ISIDOR F. SHAPIRO, New York.

The transmission of infection in rhinological work, by atomizers and suction apparatus as ordinarily used, is, indeed, quite possible. And it is very desirable to render more convenient and tempting the means for protecting the patient. I believe this want is met by the simple attachments illustrated. A suitable number of these can be kept on hand, and sterilized readily, so that patients can be treated in close succession with individual appliances without loss of time.

For spraying, I use a detachable unit comprising an ordinary Politzer nasal tip, mounted in a convenient length of rubber tubing which is equipped at its other end with a receptor connection-noz-



zle. (The receptor nozzle, of course, fits onto a corresponding ejector nozzle which is at the end of a section of rubber tubing that has been slipped over the atomizer tip. These connection-nozzles are obtainable from the C. M. Sorenson Co., New York.) By utilizing a catheter-tip on the rubber tubing, the nebulizer or atomizer becomes adapted for Eustachian medication.

For the very valuable process of medicating the para-nasal sinuses by spraying while the vacuum is on, I have devised a unit which I have found very practicable for cleansing and sterilization. It is essentially like a Luca ear syringe, modified so it will fit the nasal vestibule and not cut; a section of rubber tubing is attached over each pass, and connecting nozzles are at the other end of the rubber tubings. As is well known, this method of spraying into vacuum

is highly effective for saving many patients from nasal operations, even nasal polyps being known to disappear in the course of treatment by this method.

In using these devices, it is rather important, in my opinion, not to utilize for spraying purposes a tip which has previously been used for suction. Personally I have found the following method simple and efficient: I have the direction of the air current indicated by the ejector connection-nozzle. Thus, in a *spraying* channel, the ejector connection-nozzle aims toward the patient; it is, of course, therefore placed in the rubber tubing coming off the atomizer, and the patient's individual detachable spraying tip bears a receptor connection-nozzle. Conversely, in a *suction* channel, the ejector connection-nozzle aims away from the patient's individual suction tip, towards the vacuum-bottle's hose, which bears a receptor connection-nozzle. One can then recognize at a glance whether a nose-piece one picks up is intended to carry material to or from the patient.

REPORT OF A CASE OF CARCINOMA OF THE MIDDLE EAR.*

DR. JOHN GUTTMAN, New York.

Malignant new growth of the middle ear are of comparatively rare occurrence, therefore the report of such a case should prove of interest.

Ph. L., 60 years of age, consulted me for the first time in July, 1919. Five years ago he suffered from an attack of otitis media purulenta scuta of his left ear, then the purulent discharge ceased and the ear remained well until six months ago when there appeared again some purulent secretion and he began to complain of dizziness. Three months ago, some granulations were removed from the same ear. Subsequently a facial paralysis set in. Four weeks later a swelling of the zygoma region appeared, whereupon a mastoidectomy was performed by an attending aurist.

Present state: In the zygoma region in front and above the ear lobule, extending backward to the mastoid bone, there exists a

*Read before the Section on Otology of the New York Academy of Medicine on May 14, 1920.

swelling of walnut size, slightly fluctuating. Back of the ear the mastoid bone shows a groove about a half inch deep caused by a previous mastoidectomy. The wound is fairly clean, its base is covered with healthy granulations. In the tympanic cavity there exists a slight purulent discharge. The left facial nerve in all its branches and the left abducens nerve are paralyzed. There is total deafness in the left ear.

The labyrinth of the left ear does not react to cold water irrigation. The reaction of the right labyrinth was sluggish. The examination of the fundi of the eye, and of the urine and blood did not show any pathological changes. Wasserman negative X-ray shows a circumscribed swelling in the zygoma region, and a considerable narrowing of the lumen of the esophagus. There exists dysphagia. The laryngeal examination does not show any pathological change.

It was doubtful, whether the swelling of the zygoma region was an extension of the preceding mastoiditis into the zygomatic cells, or whether this swelling was a neoplasm.

I therefore decided to explore this swelling.

An incision in the skin was made connecting this swelling in the zygoma region with the mastoid wound. A large amount of pus and granulation tissue was evacuated. Thereupon the mastoid bone was attacked with chisel and rongeur. The cortex was found to be sclerosed, and did not show any softening. In entering the antrum large masses of neoplasma were encountered and these were evacuated. Thereupon the wound was packed and the patient returned to his bed. The dignosis of the removed tissue made by the pathologist was squamous cell carcinoma.

Six weeks later the patient died under the symptoms of a purulent meningitis.

In all cases of this kind it is very difficult to ascertain the time and place of the onset. It is difficult to state where the primary seat of the disease was, whether the tympanic cavity, the antrum of the mastoid, the petrous bone, or the inner ear.

Most cases of carcinoma of the ear show an early affection of the facial nerve. In this case the paralysis of the facial nerve was accompanied by a paralysis of the abducens nerve on the same side. The X-ray picture seems to indicate that the dysphagia was probably caused by a metastasis in the esophagus, as the larynx did not show any pathological condition.

1261 Madison Avenue.

REPORT OF COMMITTEE ON THE DEAF CHILD.

At the call of the Chairman the first meeting of the permanent Committee on the Deaf Child, selected at the last meeting of the Section on Laryngology and Otology of the American Medical Association, was held at the Hotel Chatham in New York, March 4, at ten o'clock. All members of this committee, Dr. Charles W. Richardson of Washington, Dr. Elmer L. Kenyon of Chicago and Dr. M. A. Goldstein of St. Louis, were present. Representing the American Otological Society in similar committee were: Dr. Charles W. Richardson of Washington, Dr. Thomas J. Harris of New York and Dr. Max A. Goldstein of St. Louis. The committee elected as permanent officers Dr. Charles W. Richardson, Chairman, Dr. Max A. Goldstein, Secretary.

In an informal discussion the members of the Committee set forth the aims and objects of their work. Following these preliminaries, a fixed program was outlined and a classification of work presented.

It was the consensus of opinion that much effective work could be done in the interest and uplift of the Deaf Child. The captions under which the Committee decided to plan its work are as follows:

(1) Compulsory Notification.
(2) Standardization.
(3) Classification of the Deaf Child.
(4) Day Schools for the Deaf.
(5) Medical Co-operation.

(1) *Compulsory Notification.*—At the National Convention of the Society of Progressive Oral Advocates (teachers and friends of the Deaf) held in St. Louis June 23, 1919, a resolution was introduced by Mr. John Dutton Wright of New York, setting forth the need of legislative action compelling notification, and analyzing the importance of the matter. After liberal discussion, this association adopted the Wright Resolution.

On motion duly presented and seconded the committee unanimously voted that: The need of Compulsory Notification by the parents of a deaf child to the Health Officer or Instruction Official of each community is emphasized, and, it is further Resolved, that the Wright Resolution be adopted by this Committee in planning its program, and, it is further ordered, that a copy of this Resolution be incorporated in the Committee's Report, to-wit:

Resolved, That steps be taken to make impaired hearing in children reportable, and to endeavor to have such an act passed by the legislature of each State or by other proper governmental agencies. By such legal and protective measures it may be made possible to safeguard the interests of the Deaf Child in every state and to keep in touch with his educational opportunities as readily as with the normal child.

The Secretary of this Committee is instructed to obtain abstracts of the laws pertaining to this question as enacted in all states.

To emphasize the importance of this question the Committee presents the following Resolution: Resolved, That the American Medical Association be requested through its secretary to furnish abstracts of all legislation in regard to the Deaf Child in all States where such legislation has been enacted and also to furnish information to this Committee of all States in which no such enactments have as yet been made.

(2) *Standardization*—The survey and standardization of medical schools throughout the country as instituted and carried out by the Carnegie Foundation during the past ten years has been productive of such excellent results toward developing higher standards, improving equipment, supplying adequate resources and more efficient instruction and instructors, that this Committee considers it a matter of greatest importance to urge the endorsement and co-operation of the American medical profession, through all of its organized bodies, institutions and individuals, of the plan now under consideration for a similar survey and ultimate standardization of all schools for the Deaf.

The American Association to Promote the Teaching of Speech to the Deaf, the Conference of Superintendents of Schools for the Deaf, the Convention of American Instructors of the Deaf and the Society of Progressive Oral Advocates—all national associations including superin-

tendents, principals, teachers, pupils and friends of the Deaf are actively considering this question of Standardization of Schools for the Deaf.

A joint convention of the three national associations concerned with the teaching of the Deaf will be held at the Pennsylvania Institution for the Deaf at Mount Airy, June 28-July 3, 1920, and a call has been issued for a Joint Committee Meeting of these national organizations, through special committees, appointed for the consideration of this great problem.

The Secretary of your Committee reports that in a preliminary conference with the Director of the Rockefeller Foundation and the Director of the Carnegie Foundation, he has received the encouraging assurance of a careful consideration of the outcome of this joint conference. It is hoped that a definite recommendation will follow the Mount Airy meeting and that this report may be submitted to the Carnegie Foundation and the Rockefeller Foundation for further consideration.

Your Committee heartily endorses this plan of survey and standardization of Schools for the Deaf and desires the ratification of the Section on Laryngology and Otology and the official approval of the House of Delegates of the American Medical Association at its meeting in New Orleans in April, 1920. Dr. Max A. Goldstein has been appointed the representative of this Committee to the Mount Airy meeting.

(3) *Classification of the Deaf Child.*—We have classified the Deaf Child in three groups:

(a) Congenital Deafness.
(b) Asquired Deafness (before speech has developed).
(c) Acquired Deafness (after speech has developed).
(d) Defective Hearing.

(a) *Congenital Deafness.*—Congenital Deafness is that type of deafness due to a permanent pathological impairment, or to absence, or to rudimentary development of an integral part of the sound-conducting, or sound-perceiving apparatus. As the congenitally deaf child has not an adequate perception of the sounds of speech, normal development of speech is impossible.

The management of the congenitally deaf child often presents a different and much more difficult problem than of the acquired deaf child. The latter children can be better managed and taught in institutional environment.

(b) *Acquired Deafness-* (before speech has developed).—Profound deafness, acquired by a child before speech has developed, places such child in a classification with the congenitally deaf child; for, if deafness is acquired before a child has learned speech, or at so early an age that whatever rudiments of speech the child had acquired are promptly forgotten, he is apparently placed in the same position for his educational management, and his general environment, as that of the congenitally deaf child.

(c) *Acquired Deafness* (after speech has developed).—A child who becomes seriously, or totally, deaf after he has acquired speech, may still retain a great educational asset. Speech in the normal child is an imitation of the vocal sounds he hears to express ideas. Language has become a part of his mental activity, and even in the presence of serious deafness the mental conception of speech cannot at once be altogether eliminated and should be utilized in his training. The educational conditions, therefore, of a child who has acquired speech must be carefully considered and all special opportunities afforded for the conservation of this asset.

(d) *Defective Hearing.*—This term covers by far the largest number of deaf children. In this class would be placed all deaf children other than those belonging to classes, a, b and c. The degree of defective hearing varies within the widest limits. The causes are numerous and often progressive. The prognosis is naturally by far the best. For the children of this class, the recommendations in regard to medical co-operation apply with double force. The vast majority of these children, handicapped by reason of varying degrees of deafness, often unrecognized, are capable of being relieved under proper treatment.

(4) *Day Schools for the Deaf.*—In recent years Day Schools for the Deaf have been organized in conjunction with the public school systems of our metropolitan cities and opportunities are thus afforded all children living in such communities to attend such day schools near their homes.

Enactments have been made in a number of States to authorize local Superintendents of Instruction of cities of considerable population to create classes in conjunction with their public school systems and provide a teacher for such classes for every eight to ten deaf children of school age found in such community.

In the consideration of progressive educational work your committee desires to be placed on record with its endorsement of Oral Education for all deaf children as follows:

Resolved, That we recommend exclusively Oral Instruction of deaf children, and that the oral teaching of the congenitally deaf child and the acquired deaf child be made a part of a department of the public school system, so far as possible, in all communities.

(5) *Medical Co-operation.*—Medical co-operation is classified as follows:

(a) Co-operation with School Authorities.
(b) Co-operation with School Physicians.
(c) Measures for the Prevention of Deafness.
(d) Medical Education.

(a) *Co-operation with School Authorities.*—In its co-operation with school authorities your Committee desires to submit the following:

Resolved, That medical men in all communities should uphold this Committee in connection with all efforts made toward improving the instruction of the Deaf Child, and that all medical men use their personal influence with School Boards and Superintendents to the fulfillment of the various suggestions of the Committee.

It is the intention of the Committee to work out a plan of co-operation with local medical organizations throughout the country and offer local otologists an opportunity for such co-operation under this general guidance.

(b) *Co-operation with School Physicians.*—Medical examiners or other school authorities in public schools should refer all cases of deaf children to local otologists for definite classification as to the degree and character of deafness.

To facilitate and standardize this work your Committee submits the following record sheet of examination and functional tests and recommends the adoption of this uniform record sheet as a standard.

(c) *Measures for the Prevention of Deafness.*—We urge the continuation of medical examination and the application of all methods, or treatments, in either acute or chronic types of deafness which may tend to modify, or check, the impairment of hearing.

(d) *Medical Education.*—Some years ago a special committee of the American Laryngological, Rhinological and Otological Society and of the American Otological Society was appointed to develop ways and means of presenting to the graduating class of every medical school one or two lectures having for their purpose the instruction of the Senior medical student in matters pertaining to the Deaf Child, viz.: the causation of deafness, classification of the types of deafness, the proper instruction of the parents of deaf children as to their care before school age, the locality of all State and local schools, public and private schools concerned with the education of the Deaf Child, the character of instruction given at such schools and all other data that may be of value to the young physician in shaping his opinion and assuming his responsibilities in connection with this vital problem.

In conclusion, your Committee requests an enlargement of the scope of work assigned to it to include the general subject of impairment of speech, so that it may prepare plans along similar lines toward the amelioration of speech defects in its various forms and degrees.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

March 24, 1920.

The Falsetto Voice in the Male: Demonstration of Four Cases.

DR. JAMES SONNETT GREENE.

(*To be published in full in a subsequent issue of* THE LARYNGOSCOPE.)

DISCUSSION.

DR. LEDERMAN inquired regarding the length of time required to change the character of the voice.

DR. GREENE replied that it usually took three to four weeks, depending mainly on the physical state of the individual. Sometimes after a young man had been to the clinic for only two or three treatments his voice was changed to a baritone and remained that way.

DR. LEDERMAN then cited an experience along these lines. About a year ago, a strong robust man, thirty-four years of age, came to the office with his brother who was under treatment for some ear trouble. This individual spoke in a high falsetto voice, and as a matter of interest Dr. Lederman inquired how long he had spoken in that tone of voice. The man replied that at the age of sixteen he had a cold which left him with a change of voice; and he then asked if anything could be done for him. Examination of the throat showed a somewhat highly placed larynx, but otherwise it was perfectly normal. The man was then told that he was using his voice incorrectly, speaking over his cords when he should be using his diaphragmatic muscles. A demonstration was given and after one trial the man spoke in a rich baritone voice. He was so elated with the sudden change that he took up the 'phone and spoke to his wife, who naturally did not recognize to whom she was speaking. Many of these voices are caused by a psychic condition, and by merely making the proper impression upon the individual, with a lesson or two in proper breathing exercises, they regain the natural voice. This man now speaks habitually in a rich baritone voice.

DR. ALEXANDER inquired about the type of breathing in these cases, and asked whether that was corrected as in some cases of stammering.

DR. GREENE replied that the patients were trained to breathe abdominally, which they usually did not do when they first came.

DR. ALEXANDER then inquired what type of tone exercises was given. Was the training through the placement of the tones or just in the nature of them?

DR. MACKENTY said that the subject presented by Dr. Greene was something quite new to the section and that few if any of the members were able to discuss it. It was very gratifying to have one of them, a man like Dr. Greene, take up this work from a scientific standpoint, and to be able to accomplish such really wonderful results. He said that he had known Dr. Greene since he first started this work in voice correction and both the Section and the city were to be congratulated upon having a man of such character and experience who could show such marvelous results in the correction of defective speech.

DR. QUINLAN asked if the singing voice as well as the speaking voice was falsetto.

DR. ALFRED KAHN asked how Dr. Greene placed the electrodes in applying electricity to the throat, on the outside or the inside; also how long he allowed them to remain; and if on inside how he overcame the difficulties in placing them.

DR. LESHURE inquired whether these persons could still speak in a falsetto voice when they made an effort to do so.

DR. GREENE replying to the inquiry regarding tonal exercises said that in the first place it was necessary to stimulate the patient's musical sense to such a degree that he is able to discern the difference between high and low notes. Being accustomed to his own high shrill voice he has so lost his sense of tonal differences that he thinks his falsetto is the same as the baritone of someone else. When this musical sense is established he is then trained to bring his voice down one note at a time until he gradually reaches the chest register. In conjunction with this his kines thetic sense must be developed so that he feels the position that the larynx takes in this change.

These patients usually speak and sing high.

The electrodes are placed outside on the thyroid plates.

Replying to Dr. Leshure's inquiry as to whether after these patients learn to speak in a baritone voice can they return to the use of the falsetto? Dr. Greene replied that if they do and should begin to speak falsetto again they would require a retraining to bring the voice down again. They should never try to use the old falsetto voice but should always employ the new method. It is very easy to slip back into the old habit of speech; but as a rule they soon become accustomed to the change of intonation and do not wish to go back.

A Method of Anesthesia for Adenoid and Tonsil Work. DR. JAMES T. GWATHMEY.

(*To be published in full in a subsequent issue of* THE LARYNGOSCOPE.)

DISCUSSION.

DR. WESLEY HUNT said that he had the privilege of operating on a number of these cases with Dr. Gwathmey when he was working at St. Bartholomew's Clinic. Most of the patients were children, and there were some adults, and the method of anesthesia was a very pretty one. In most cases the small amount of bleeding was surprising and it was not necessary to use the sponge or suction. When one remembers how some of these patients behave and thrash around, the results with this method seem remarkably gratifying.

DR. JAMES J. KING cited a very unusual case of a patient with heart lesion in which Dr. Gwathmey administered the anesthesia per rectum. The patient was a boy seven years of age; his foramen ovale did not close, and at seven years he was a blue baby, the skin was almost purple. Dr. Gwathmey was asked to give the anesthetic, and he decided to employ oil-ether per rectum. The child was given an enema every morning for a week before the operation, but on the seventh morning he received oil-ether, and he did not know anything about the operation. The adenoids and tonsils were removed and he was taken back to his bed, and afterwards told his mother that he had had a little nose bleed during his sleep. The child is still alive and has been very much better since the operation. The operation was done 5 years ago.

DR. ALEXANDER said that he had had the privilege of working with Dr. Gwathmey at St. Bartholomew's in the earlier years, and had noted that in the paper Dr. Gwathmey said nothing about the beneficial effects of chloretone. In many instances they used as a preliminary sedative small doses of chloretone, 5 or 10 grains, depending on the body weight of the child. Dr. Alexander said he wished also to confirm what Dr. Hunt had said about the excellent condition of the patients when the Gwathmey method of anesthesia was employed. They were quiet and pink, with no cyanosis, and in many instances were talking when they left the table.

He understood that Dr. Gwathmey had said in the paper that the patients should not be turned on the side. It is the custom with many men to instruct the nurse to turn the patients on the side when they are put to bed so that they can be watched better and prevented from swallowing the blood.

DR. IMPERATORI, referring to Dr. Alexander's remarks about the turning of these patients, said that he himself had been in the habit of having these patients turned completely over on the stomach, and did not think it produced any harm after the operation was over.

Another point has been brought up which would apply more particularly to those who did not use the elaborate apparatus of Dr. Gwathmey. At Bellevue in operating on tonsils the head is placed in the extended position, somewhat as though one was about to do a laryngoscopy. A Frankel tongue depressor is used. When the patient shows any symptoms of not breathing properly, the tongue depressor is placed so that the end or the beak is at the base near the epiglottis and exerting a lifting motion, the same effect is produced as though the tongue was pulled out of the mouth.

DR. HAYS said that it seemed hardly necessary in the Nose and Throat Section to mention the importance of the anesthetic in adenoid and tonsil cases, but he wished to say a word for the benefit of those men who seldom employed an expert anesthetist. In his own practice he had found it of the greatest advantage to have an anesthetist who could watch the patient and take that responsibility off his mind. Much depends upon the kind of anesthetic employed and one cannot be too strongly impressed with the fact that even with the best of anesthetists and technique accidents are still liable to happen. Doubtless all would remember that last year a great number of cases of abscess of the lung after tonsillectomy were reported, and that finally it was observed that most of these cases came from one hospital and there was a great deal of concern as to the cause. . . . He himself had been unfortunate in having a lung abscess occur in a patient where the most careful technique had been employed with the aid of one of the best anesthetists in the city, another illustration of the fact that one cannot be too careful in these cases.

DR. FORBES inquired concerning the cost of employing the method in a hospital where so many operations are performed during a day, as compared with the simple ether method usually employed.

DR. GWATHMEY, replying to the remarks of Drs. Alexander and Imperatori regarding turning the patient, said that after the patient was put to bed there would be but one turn given; but he had been with men who turned the patient not once but several times, and when the patient was put to bed he would be in a collapsed condition, merely as the result of the frequent turning and not at all from the work done or from the anesthetic. Of course there could be no objection to just turning the patient over once as Dr. Alexander had mentioned, so that any hemorrhage could be noted.

As to the cost, if one used gas and oxygen the difference would be the difference between air from a small electric pump and nitrous oxide and oxygen. At St. Bartholomew's it was estimated that the expense would be 50 to 75 cents per patient above the routine procedure in general use. In any large hospital they would get prices that the anesthetist could not get, but using gas and oxygen or anesthol the principal advantage is that you have a deep anesthesia during the operation, yet before the patient leaves the room his reflexes have returned; and in five to ten to twenty minutes the patient is perfectly conscious again. While the cost would be slightly greater to the hospital, the patient's vitality would be conserved.

1. Peritonsillar Abscess Simulating an Internal Jugular Phlebitis. 2. Peritonsillar Abscess: Streptococcus Hemolyticus Bacteriamia. Tuberculosis of Nasal Mucosa. DR. WESLEY C. BOWERS.

Before the Eastern Section of the Triological Society, several weeks ago, Dr. Mosher, of Boston, reported a case of Retro-pharyngeal abscess associated with a deep cervical abscess due to an internal Jugular Phlebitis. In this connection, I feel that the following two cases should be reported as illustrating the difficulties in determining the best mode of procedure in cases of retro-pharyngeal and peritonsillar abscess.

The first case—that of a young man twenty years of age—came to me about one year ago complaining of sore throat and pain in the right side of the neck which had developed within twelve hours. Upon examination, the right side of the neck was found to be edematous. Below the

angle of the jaw, the edema extended backward behind the Sterno-Mastoid muscle almost to the middle line. This area of edema was exceedingly tender to touch and red. The most marked redness and tenderness was about 2 inches below the angle of the jaw and about 1 inch behind the posterior border of the Sterno-Mastoid muscle. His right tonsil was prominent—the pillars edematous and reddened. There was marked fullness in the soft palate on the right side. His temperature was 102° and he appeared very sick. Thinking this was a peritonsillar abscess, I made an incision in the anterior pillar at a point on a level with the outer margin of the tonsil. Upon reaching the capsule of the tonsil, I obtained a few drops only of a thick, greenish pus. Twenty-four hours later, I was surprised to find that the conditions of his throat was about the same in appearance—the edema of the right side of the neck was worse—he had been having some slight chills, with a temperature between 99° and 102°. Thinking I had not reached the seat of the trouble, I then dissected the anterior and posterior pillars away from the upper pole of the tonsil and obtained a moderate amount of thick, greenish pus. Twenty-four hours after this, I saw him again and found him much more prostrated. His throat had not changed in appearance—he had had several chills and his temperature was 104°. As I had made two good attempts to drain the pus and had failed to give sufficient drainage and as his condition was becoming more and more serious, I decided to remove the tonsil. This I immediately did. Upon seizing the tonsil with forceps several pus pockets were opened and I met several such pockets while dissecting the pillars away from the tonsil. The following day the temperature went to normal and the patient made an uneventful recovery. The fossa had an unusually thick white membrane over it; otherwise, the throat looked normal and all the edema and soreness of the neck promptly cleared up.

The second case was one which gave the history of having had some pain in the left side of the jaw, and the two rear upper molars had been extracted. At the same time an opening had been made in the soft palate just posterior to the molars from which opening pus had been evacuated. At the time I saw him, he was having a very severe chill, following which his temperature went to 106°. Examination showed what appeared to be a peritonsillar abscess which was rapidly getting well. He had pus in the left side of his nose and his left antrum transilluminated dark. There was some swelling of the left side of his face and very slight thickening of the tissues of the left side of his neck. As his throat looked so well, it was deemed advisable to drain the left antrum. This was done but only a small amount of pus obtained. His blood culture was positive for Streptococcus-hemoliticus. For a number of days he kept running a temperature between 98° and 106°, with severe chills. The left side of his throat began to swell again. I made an incision external to his tonsil and entered a very large abscess cavity which extended backward and upward behind the pharyngeal wall. He died six hours later.

The picture in this case was typical of a septic phlebitis and I have no doubt whatever that he had an internal jugular phlebitis—that, had we made an external opening into the neck, we would have come upon a deep abscess with a jugular vein thrombosed.

This case gave fewer symptoms in the neck and throat than the first case, although the first case undoubtedly had no involvement in the neck and the second undoubtedly did.

Dr. Mosher's case of internal jugular phlebitis associated with retropharyngeal abscess, and one other, are the only ones so far as known that have ever been reported. I believe that this phlebitis occurs oftener than we suspect and that it should always be considered when a retropharyngeal abscess or peritonsillar abscess associated with chills and intermittent fever, especially when there is any thickening of the tissues of the neck. As the first case shows, this thickening may be very misleading.

My conclusions are: *First*—If a case gives the appearance of being a peritonsillar abscess and it is impossible to obtain good drainage either by dissecting the pillars loose or by puncturing through to the external aspect of the tonsil, it is far better to remove the tonsil completely rather than to make multiple punctures or frequent trials—especially when the condition is one associated with much systemic infection—as in these cases. There are undoubtedly, a number of pockets and it is impossible to obtain good drainage by any other procedure.

Second—If a peritonsillar abscess or a retro-pharyngeal abscess is associated with symptoms of a bacteriemia, such as chills and a high, remittent temperature—whether that patient has a positive blood culture or not—it is most important to give the patient a chance for his life by making an exploration in the neck with the hope of finding an internal Jugular phlebitis.

Third—That in the case of a bacteriemia following a tonsillectomy it would be well to try to rule out a jugular phlebitis.

Tuberculosis of Nasal Mucosa. DR. WESLEY C. BOWERS.

About one year ago, a patient presented herself with the history of having had a tubercular peritonitis, which was operated upon and the peritoneum found to be studded with miliary tubercles—a tubercular gland in the lower part of the neck—and a tubercular involvement of the thyroid. She complained of inability to breathe through her nose.

Examination showed a small discharging fistula in the abdominal wall, a small discharging fistula over the thyroid and another over her sternum. On the left side of the nasal septum, about 1½ inches from the front border and about ½ inch from the floor of the nose, there was a swelling about ½ inch in diameter and ¼ inch thick, apparently protruding from the septum. The surface was smooth and covered by dull red normal membrane. The consistency was firm, with no fluctuation. On the right side of her septum, there was a slightly smaller swelling situated at the same level but slightly farther back—having exactly the same appearance as the one on the left side.

An incision was made around the swelling on the right side and the mucous membrane dissected up. The swelling was found to contain thick, cheesy inspiccated material, typical of a tubercular process. This swelling connected by means of an opening ½ inch in diameter with the swelling on the left side of the septum. The mucous membrane was dissected wide of the swelling on both sides and a portion of the cartilege was removed. The nose was loosely packed. The wound healed up completely and at this time—one year later—shows no tendency to recur.

Dr. Frederick E. Sondern's report on the specimen is as follows:

Specimen received February 19, 1919. Examination of tissue. The specimen consists of two irregular masses of soft tissue, measuring 1.8x1 cm. and 1x0.7 cm., respectively. Color is reddish externally; cut surfaces opaque grey. Microscopic examination shows a granulomatous lesion of the nasal mucosa with the histologic components of tuberculous inflammation, viz., giant cells, necrosis, proliferation of epithelioid cells, etc. The tubercles are of the miliary type, and the process seems to be fairly active and acute.

Diagnosis: Tuberculosis of Nasal Mucosa.

This case is reported because of the fact that several authorities have doubted that there ever was a tubercular involvement of the septum and I believe that in this case there was no question of it.

I might mention also that all the sinuses and nose have healed up. the patient has gained a great deal of weight and is able to be up and out after two years in bed.

DISCUSSION.

DR. FREUNDENTHAL said that he had been forced to do a tonsillectomy in a case of peritonsillar abscess by the patient herself; she insisted that if another operation had to be done she wanted it all done at once. A general surgeon was consulted who strongly advised against it: but realizing that if an incision was made there would be some risk anyway, the tonsillectomy was performed and the woman got perfectly well.

DR. TYSON of Albany, also recommended tonsillectomy for this kind of abscess while the abscesses were there.

DR. FREUDENTHAL said that he had fortunately not seen a case of the second type mentioned by Dr. Bowers. In regard to the case of tuberculosis of the nasal mucosa, it would seem that there were multiple abscesses elsewhere in the body. He had seen and treated many cases of tuberculosis of the throat, but only few with tuberculosis of the nasal. Dr. Bowers was to be congratulated upon his successful results.

DR. HAYS said that he did not recall another year in which he had seen so many peculiar diseases of the throat as during this one, particularly peritonsillar or retro-tonsillar and conditions. It is a question of what has caused them.

Two or three weeks ago he was called to see a case and found a diphtheria sign on the door. The first doctor had made a diagnosis of diphtheria and had notified the Board of Health, but no culture had been taken. On examining the throat a very profuse abscess was found, and the boy could scarcely breathe and could not eat. A culture was taken and streptococcus hemolyticus was found—but there was no indication of abscess formation; so at the second visit a diagnosis of peritonsillar abscess was made but no pus was found. The third time a small amount of sero-pus was obtained, which did not seem to account for the condition. The next day several slashes were made in various directions, and an enormous amount of pus was evacuated from a retro-pharyngeal pocket on the right side. It was no doubt a peritonsillar infection of some sort.

In another case there was a tumor-like formation diagnosed sarcoma extending beyond the median line, a retro-pharyngeal growth. It was cut a number of times before the pocket was found. Dr. Yankauer was called and pronounced the condition a sarcoma not a peritonsillar abscess, but a piece of tissue was examined and pronounced not malignant. When the patient got a little better, a large piece was removed and examined, and this was reported not malignant and not syphilitic, but simply an infection of the tonsil. One often sees cases where the usual method of procedure is not the proper one. Doctor Bowers was perfectly right in stating that if you have such an abscess where it cannot be drained the tonsil should be taken out. The freest possible opening should be made so as to get rid of the infection as in any other part of the body.

DR. DAVID H. JONES told of a patient from whom no history could be obtained with an otitis media demanding immediate operation, in which the house surgeon made a diagnosis of peritonsillar abscess. He examined the patient and found what seemed to be a peritonsillar abscess, but when an attempt was made to insert the knife no pus was found; it was found to be very hard tissue. This was reported to House Surgeon and that night during absence of H. S. the dyspnea became marked and the acting house surgeon attempted to open mass but could not find any pus. The next morning the house doctor attempted to incise it but did not get any pus, and afterward it was found to be a sarcoma. One should always feel with the finger to ascertain whether it is a soft or hard mass.

DR. LEDERMAN said that his associate at Lebanon Hospital, Dr. Heller, had treated a series of peritonsillar cases by enucleation of the tonsil. He had operated upon about 30 cases more and found that the wounds healed up very nicely after the operation. In all these cases suction was used at the time of operation. A report of these cases would probably be made later.

DR. ALEXANDER said that he had had no experience in removing tonsils, but had had some in quinsy cases, and in these conditions the question of anesthesia was a very serious one. He did not like to give a general anesthesia and hoped that some of the men would tell him how they got around this difficulty, unless by giving colonic anesthesia. It was not good surgery to open into a direct field of infection in such a case.

DR. MAYBAUM said that Dr. Bowers' first case illustrated the fact that repeated minor incisions, either anterior or posterior to the tonsil, are of little avail in some of these cases, especially those of a phlegmonous type. By making these incisions too early or in a direction which does not reach the abscess cavity, new avenues of infection are opened. As a result, an external operation may be necessary because of a complicating cellulitis or deep abscess in the neck. Whether a tonsillectomy is advisable at this time, is questionable.

He expressed the opinion that cases of the second type of jugular phlebitis following peritonsillar infection are not common. Most of these cases are the result of a secondary infection of the neck of a phlegmonous type. Late in the afternoon he had been asked to see a case of peritonsillar infection following a tonsillectomy which had been done two days before. The operation was beyond any possible criticism. There was considerable swelling, but no fluctuation in the region of the posterior pillar extending down to the pyriform fossa, nor was there edema of the epiglottis and arytenoids. A brawny hard swelling extended from the angle of the jaw almost to the clavicle and to the median line. The temperature ranged from 102° to 103°. No chills. The case is under careful observation, and if the local signs increase an external incision may be necessary. Cases not any further advanced do recover by measures directed to the throat.

As to the question of anesthesia: it is inadvisable to give a general anesthetic because of the danger of sudden laryngeal edema. Local anesthesia may be tried.

DR. MCCULLAGH said that he had not understood Dr. Bowers to recommend doing a tonsillectomy in peritonsillar abscess as a routine procedure, but that he deemed it best in this particular case. He was justified in that instance, but as Dr. Alexander had said, it is not a good surgical procedure outside of special circumstances.

He understood Dr. Bowers to recommend in every case of peritonsillar abscess or throat infection in which a bacteriemia was found that the internal jugular should be explored by an incision in the neck. Some time ago investigations were made at the Manhattan Eye, Ear and Throat Hospital as to the occurrence of bacteriemia in acute infections of the throat and, comparatively speaking, a large proportion showed a bacteriemia. If Doctor Bowers would look up these papers he would find that a bacteriemia with a throat infection would hardly of itself justify the doing of an external operation for inspection of the jugular vein. These cases nearly always get well without operative interference.

DR. FREUDENTHAL said that we have to differentiate between two classes of pus infection, one that protrudes far into the lumen of the pharynx, so that the patient can hardly open the mouth. To operate on such a case under general anesthesia is generally contra-indicated. But as a rule these abscesses can easily be incised and the pus evacuated. The other class of cases contains just as much pus but the mouth can be opened much easier because the pus buries itself into the outer wall of the pharynx. In such cases he gave general anesthesia, though of course one has to be very careful here too!

DR. BOWERS said that he had not intended to give the idea that he thought it necessary to take out the jugular in every case of bacteriemia. In this case it seemed that the patient would surely die: he was getting worse every day; he had severe chills so that he shook the bed, and his temperature would fly to 106° or 107°; the case seemed bound to terminate fatally, and there was nothing else to do. It seemed possible that the internal jugular might be involved and that such a procedure might possibly save the patient.

The man was given an anesthetic, got his head well back over the edge of the table, and with the aid of strong suction worked very carefully and slowly; whenever pus was seen, it was sucked out. Working that way, there was very little danger. In this instance there was not a great quantity of pus, but it was very thick and was easily removed.

Dr. Bowers said he would not hesitate to give an anesthetic while working that way, for there was very little danger of its being aspirated. A local anesthetic was almost impossible in such a case.

DR. LEDERMAN inquired if it was not a fact that in these cases of streptococcus hemolyticus one generally finds comparatively little pus. Some years ago he had reported four cases of phlegmonous epiglottis where there was a great deal of infiltration and edema, but only a small quantity of pus present, though the local disturbance was very serious. He would like very much to hear the experience of the members on this form of infection.

DR. HAYS said that in the majority of cases in which cultures were taken, and they are now taken in practically all cases, the streptococcus hemolyticus is found and there is very little pus. As a rule, a pure culture is not obtained, but as an actual fact, the throat surgeons agree, and the general surgeons also, that in the most severe infections there is very little pus but what there is, is of extreme virulence, and that is what we have to contend with in these cases of extreme cellulitis in the throat. All of those who had been members of the Section for very long could recall cases of death from phlegmonous abscess, due not to the anesthetic but to the phlegmonous condition. Dr. Hays said that he would hesitate very much to give an anesthetic in these cases.

DR. HURD presented the following instruments with a few explanatory remarks concerning the advantages of each.

Small suction tube, used mainly for diagnosis. Tonsil clamps and tonsil needles. Forceps for ethmoidal work, a modification of the Gruening biting forceps. Flexible curette to be used instead of a snare for polypoid tissue. A de Vilba instrument, used for picking up the epiglottis. Chisels, etc.

DR. CORWIN said that the suction tube was a very efficient instrument to bring the tonsils into view and to withdraw exudate from the tonsillar crypts, but that it had to be used carefully. It was a great advantage in getting out the secretion from the tonsils and especially in finding whether it was a fetid secretion; presumably it would be useful in getting out fluid for cultures.

DR. KAHN said that of the instruments shown he had been specially interested in the needles for carrying sutures into deep cavities. He himself had invented an instrument which he would show at some future meeting. The instrument he had in mind was a needle carrying a continuous suture, which would obviate the necessity of rethreading a needle.

He had also another somewhat similar instrument composed of two needles so arranged that one of the needles could pick the thread away from the other, thereby simplifying the technique of sewing in deep cavities.

DR. HURD replying to Dr. Corwin's inquiry concerning using the suction tube for getting cultures, replied in the affirmative. The tube is first sterilized, and the pus flows into it, and cultures can easily be made.

A Portable Apparatus for Cleansing the Nasal Accessory Sinuses. DR. IMPERATORI.

This is a very useful apparatus. Dr. Yankauer has devised a similar one, but is more elaborate than this. No originality is claimed. The apparatus consists of an anesthesia bottle with the tube reversed, so that there is pressure within the bottle. Whatever fluid there is within the bottle, when the valve is opened will be forced out by the contained pressure. It has an ordinary paquelin cautery bulb attached, and the amount of pressure obtainable is only that which one has in the bulb. It is well adapted to washing out all the sinuses. There is enough pressure within the bulb to force out the remaining fluid within the sinus being irrigated. The cost of the apparatus is less than three dollars.

DISCUSSION.

DR. HAYS frankly confessed that he liked the Nichol's apparatus very much and used it with his patients. One can never teach some of them

to do the right thing, and they are bound to get themselves into trouble for they will never use anything in a sensible way. This apparatus was certainly a good cleanser, and was safer than anything else he had seen in the way of a douche. Many patients cannot use the suction part, but if the fluid was allowed to flow through gently one could hardly get into trouble with it.

The objection to most douches is that it is a very bad habit to get into. If the mucous membrane is cleansed thoroughly without the use of the oil spray, the patient is apt to get up an atrophy or an hypertrophy worse than he had before.

DR. UUGER said he had no use for any such apparatus as the Nichol's for in his opinion the disadvantages outweighed the advantages. The inventor gives an illustration with the patient holding his head down and the water presumably flowing in; in that position of the head the soft palate is raised, and there is an accumulation of water in the posterior nasal cavity which rises to the level of the Eustachian tube, and there is an opening of the mouth of the tubes so that infection from the fluid can very easily enter. In cases of atrophic rhinitis it is much more easy to open the Eustachian tube, and it is still easier for the infection to enter. An apparatus like that ought to be condemned and never to be recommended to a lay person.

DR. IMPERATORI said that thirty years ago Dr. Solis Cohen and within the past ten years Dr. Simon Baruch had earnestly protested against the practice of permitting a patient to use a nasal douche so frequently, for it is liable to bring about an atrophy of the nasal mucous membrane.

SECTION OF RHINOLOGY AND LARYNGOLOGY.

April 28, 1920.

Laryngitis Sicca. DR. D. H. JONES.

Mrs. E. S., 57 years of age; widow; no serious illness; mother of five children, youngest 17 years of age; no miscarriage.

She has always had difficult breathing as long as she could remember. She has always had a copious discharge and crusts from the nose until a year ago when she had a heavy cold, followed by hoarseness and loss of voice for three or four days, when after expectorating dry crusts the symptoms cleared up. She has had several of these attacks.

On February 21, 1920, she woke up with an attack of dyspnea which lasted half an hour, when, after coughing and expectorating crusts she was relieved. Two days later she had another similar attack.

On March 3, she came to the hospital on Dr. Coffin's service, with a very marked dyspnea, so severe that all preparations were made for immediate tracheotomy. Temperature 101°, pulse 100, respirations 38. This continued with remissions for three days.

The patient appeared to be a fairly well nourished woman. Examination of the nose showed a very small anterior nares, especially on the left, filled with pus discharge and crusts, on removal of which a bloody discharge followed. The septum was deviated to the left, and the middle turbinate on the left side was somewhat enlarged. There was also evident an atrophic rhinitis. Examination of the mouth showed the tongue to be red and dry; studded over the buccal mucous membrane as gums were minute pinpoint white areas surrounded by reddish areas. A culture from these areas showed a profuse growth of staphylococcus aureus and streptococcus. The pharynx showed evidence of atrophic pharyngitis. There was a small papilloma present on the left side of the soft palate; and the lingual tonsils were very much hypertrophied on the left side. The larynx, epiglottis, and arytenoids, especially the vocal processes, were congested and covered with exudate, and between the vocal cords was a dark stringy mass which vibrated with inspiration and expiration. This mass was removed and revealed crust-

ing below the cords extending down into the trachea. After the removal of the mass the breathing became easier.

The following day dyspnea recurred, and another plug was removed, followed by bloody oozing.

A culture from the speudo-membranous exudate shows staphylococcus albus, and microscopically shows nasses and strands of fibrin, polymorphonuclear neutrophiles, and red blood cells; also areas of stratified squamous epithelium.

Transillumination shows darkening of both antra.

DR. IMPERATORI said he had seen the patient in Bellevue Hospital, where she stayed for a week. At that time she had severe dyspnea, caused by crusting in the larynx, and the case was diagnosed as laryngitis sicca. The cause of it was probably an ethmoiditis. She had an atresia of both nares, and pus was pouring down from the post-nasal space into the larynx. After leaving the hospital she reported to the clinic for treatment, which consisted of removing the crusts and applying albolene, but this gave no benefit. She was then given an inhalation, and this seemed to give her some relief, but she did not return for some time. Along in the latter part of February she frequently became dyspneic, and she was advised to enter the hospital, but she disappeared. She was very fortunate to come under the care of Dr. Jones. The condition now seemed to be about the same as it was in December, with the exception that there are now no crusts. It may be that at this particular time she breathes better, but as soon as the crusts appear she will become dyspneic. There was no doubt but that she had greatly improved in her general appearance.

Mucocele of Frontal Sinus. DR. W. M. DUNNING.

The patient, a married woman with two children, was referred to Dr. Dunning of the nose and throat department of the Manhattan Eye and Ear Hospital on March 16, 1920. The family history was negative, general health good. No other illness known except measles and "dropsy" after the birth of the first child eight years ago. The two living children are well; one child died of marasmus.

In February, 1920, the patient presented herself to Dr. T. H. Curtin, ophthalmologist, with a marked exophthalmus of the right eye. At that time a mass could be felt above the inner canthal ligament, with limitation of movement of the eye inward and upward. The history of the exophthalmus given to Dr. Curtin at the time covered a period of three months previous to the application for treatment. During these months the protrusion had increased slowly and steadily. She was referred to the Manhattan Eye, Ear and Throat Hospital for observation.

The X-ray report made in March showed the right frontals extremely large, the left of average size, and both severely involved from granulations or pus; the left ethmoid moderately involved, the right severely; the left antrum moderately involved, the right clear. The sphenoid showed a mild involvement with thickened membrane. There was no history of pain; no nasal discharge; no tenderness over the sinuses; no impairment of sight. A diagnosis was made of mucocele of the frontals and ethmoids. Dr. Dunning, to whom the case was referred, decided on a Killian operation.

The usual pulp incision was made. On opening through the periosteum over the right nasal bone, thick muco-pus welled out. The ethmoids and orbital plate had been completely eroded. The bone over the frontal sinus was very thin, and there was a hole through the periosteum and the bone over the bridge. The frontal sinus, which was full of thick muco-pus, was very large. The anterior wall of the sinus was partially removed; the middle turbinate was removed intra-nasally and a large opening made from the nose into the cavity, the bone in that region being very thick. Packing was extended into the frontal and ethmoid areas through the opening left at the side of the nasal bone, thus establishing drainage. The wound was closed and dressed. It has

been found that the operation relieved the exophthalmos, and that a diplopia which came on after the operation has practically disappeared.

DISCUSSION.

DR. T. H. CURTIN said that the patient, Mrs. Tillie U., was first seen at the Bronx Eye and Ear Infirmary on February 19, 1920, with a marked exophthalmos of the right eye. A mass could be felt above the inner canthal ligament and limitation of movement of the eye inwards and upwards. She gave a history of the exophthalmous existing for a period of three months previous to her coming to the hospital and also that there was an increase and diminution of the proptosis. Vision in right eye was 20/30 and the left eye 20/100. A fundus examination normal.

She was referred to the Manhattan Eye, Ear and Throat Hospital for further observation. Wasserman test negative and nose examination was also negative; transillumination negative. X-ray report showed right frontals extremely large, left average size, and both severely involved from granulations or pus, especially the right one. Ethmoids, the left moderately involved and the right severely so from granulations or pus. Antrum, left moderately involved and the right clear. Sphenoid show mild involvement with thickened membrane.

A diagnosis of mucocele of the frontals and ethmoids was made and the case referred to Dr. Dunning of the nose and throat department for operation.

Exophthalmos due to mucocele is rather a rare condition in ophthalmology. However, cases have been reported in German literature by Paunz who in his case found the mucocele sac consisted of the dura above and the periosteum of the inner wall of the orbit.

Zentmeyer of the Ophthalmic Record of 1908 reports a case of proptosis suddenly occurring but his case showed, however, an exudation around the optic nerve the condition being relieved by a profuse purulent discharge from the nose.

Caldraro, 1908, reports a case and finds many atypical forms of mucocele of the frontal sinuses which are very difficult to recognize due to the variability of the sizes and extent of the sinuses themselves.

The exophthalmos has been relieved and the vision improved. Another curious condition came on after the operation, i. e., she complained of diplopia. Some of the men say that after the Killian operation diplopia has been noted, and that it is due to injury of the superior oblique nerve. Her diplopia, however, has cleared up and her vision is practically the same. It would be interesting to know how many cases of diplopia have been seen due to exophthalmos.

DR. GUTTMAN told of a case seen at Dr. Herman Knapp's Clinic. It was diagnosed by other physicians as a new growth. The man was almost blind in one eye. Dr. Knapp made a diagnosis of mucocele and operated and the man's sight was restored.

DR. BEAMAN DOUGLAS said that he had seen one case of mucocele of the frontal sinus and one of the ethmoid cells.

DR. COFFIN said that he had seen a number of cases of exophthalmos due to mucocele, and that some years ago he had presented one before the Section.

DR. DWYER said that within the last year he had seen five cases of mucocele that were operated upon at the Manhattan Eye, Ear and Throat Hospital. Most of them were way back on the sphenoid. Some of the cases showed very beautifully the route from the sphenoid. Three of them cleared up very readily, with spontaneous diplopia after the operation.

Meningocele. (Two Cases.) DR. W. M. DUNNING.

The first child was about a year old, and the meningoceles did not appear until it was about six months old, when the parents noticed the swelling. X-ray pictures showed the opening in the bone, and when the child cried the tumor would swell. Dr. Dunning said that the pathology was about the same as that of cystocele in other regions. The

case was presented simply on account of its being a rather rare condition.

In the second case, the child was brought to the office for treatment of an ear condition, and when it cried the swelling was observed.

The meningocele appeared at the junction of the frontal and nasal bones, as a round swelling and increased in size on crying or coughing.

Sarcoma of Antrum. DR. L. A. COFFIN.

The patient is still under treatment and observation in the wards. She is 22 years of age, married, and has one child seven months old; has never been sick, excepting with measles when an infant, but has not felt well since the baby's birth. Shortly after Christmas, 1919, she noted that her cheek was tender to touch, but there was not much pain. Later, the cheek began to swell, and in the latter part of January she noted an exophthalmos. She was sent to the Eye Department of the Manhattan Eye, Ear and Throat Hospital, from which department she was referred to me. At that time the tumor could be felt through the cheek and followed up into the orbit. She came to operation on February 18. An incision extending from the inner canthus of the eye downward along to the side of the nose through the upper lip was made. Upon the cheek's being turned back, the tumor presented, having eroded through the facial wall of the antrum. The orbital floor was missing so that the tumor was pressing on the eye. The tumor was apparently removed en masse. The incision was closed with horse hair sutures. Primary union; no exophthalmos, no diplopia. On March 1st, 281 milligrams of radium was applied for two and a half hours, followed on March 27th by an application of 200 milligrams for five hours, after which she returned home.

On April 13 she came to my office, having a greater degree of exophthalmos and chemosis than I had ever seen. A second operation was then performed (specimen submitted), the eye was enucleated, and the entire growth removed. After one week she was exposed to 281 milligrams of radium for 16 hours. Notwithstanding all that has been done, I think I see evidences of the growth's recurrence.

DISCUSSION.

DR. HARMON SMITH said that last year before the Trilogical Society he had been called upon to discuss this subject and had made the statement that he believed a sarcoma which intruded the nasal cavity from an adjacent sinus had proceeded too far for operative measures and that in his experience none had been eradicated by operation; that unless one could administer radium with success or could use Coley's fluid, which is only rarely successful, and results merely in the relief of pain, the case had better be left alone. He still adheres to that belief. In one of his cases Dr. S. had operated and the growth was found to extend from the frontal sinus into the brain. Dr. S. had operated upon another case with the same result. So that, excepting for the relief of pain, operative measures had usually proved a failure.

DR. GUTTMAN told of a case of sarcoma of the antrum where there was a polyp in the nose. An X-ray picture was taken and showed affection of the antrum. At operation the condition was found to be due to sarcoma; and the patient was subjected to radium treatment. It was again operated upon, and the patient continued the treatment for two or three weeks, but six weeks later died. The radium not having any effect on the condition.

DR. DWYER corroborated Dr. Smith's remarks and said that he had seen quite a few of these cases in which the nose was involved and operative measures failed. Unless it was a case showing the giant cell sarcoma, which is only locally malignant, all of these cases of young persons so affected end in death.

DR. FREUDENTHAL said that in his experience cases of sarcoma had almost always ended fatally, whether operated or not. The few good results he had secured had been with cases of sarcoma of the tonsil.

DR. MCCULLAGH said that Dr. Freudenthal would probably recall a case of sarcoma which he had treated with radium for him. The patient had a secondary operation, and there was a slight recurrence, but Dr. Freudenthal applied radium, and three or four years later when he last saw the patient she was alive and well and had no further recurrence. In that instance, however, the growth was an osteo-sarcoma.

DR. FORBES said that two years ago Dr. Douglas had operated on a case of sarcoma of the superior maxilla which involved the antrum. The patient was well now and very comfortable with a dental plate covering in the space left by the removal of the alveolar process and part of the maxilla.

DR. DOUGLAS said that in the case to which Dr. Forbes referred he had removed most of the superior maxillary bone. It was the only case of small celled sarcoma of the nose in which he had ever operated with successful results. As a rule as soon as the diagnosis is made the death warrant may be signed. He had never seen more than temporary relief; and he had seen them left after operation with a much worse cosmetic condition than if nothing had been done. In his service the staff call these cases facectomies. They recur very rapidly and end very rapidly, and the X-ray and the radium do very little good. They may have a short period of quiescence, but very quickly recur.

In the last two weeks he had seen a most interesting case springing from the sphenoid, a lympho-sarcoma. It filled the sphenoid and involved the naso-pharyngeal vault, the right lateral wall of the pharynx, and the glands of the neck were enlarged. The patient received one application of radium, and the whole thing disappeared. In two weeks it appeared in the maxilla, and in two weeks it disappeared from there and reappeared in the neck. The microscopic examination proved it to be lympho-sarcoma. In that case the radium was administered from the very start, but notwithstanding the best radium treatment he died in ten weeks. It was a very malignant case.

DR. COFFIN said that in this case there was no growth that showed in the nose. The only way one could tell that there was a tumor at all was by feeling it. He would not hesitate to operate on any such case. with the woman suffering as she did and the eye bulging from her head. He took issue with Dr. Dwyer in regard to operation hastening death in this particular case as he felt that the woman would doubtless have been dead now had not the operation been done. Her husband had been told there was little or no chance for her, but that she would have some relief. She feels much better now, and is going home to her baby, happy for a time at least.

The exact character of the growth was not known previous to the first operation.

Dr. Coffin said inasmuch as osteo-sarcoma had gotten into the discussion that he had seen several cases in which the drum had apparently been entirely eliminated by operation.

Two Cases of Radical Antrum Operation. DR. L. A. COFFIN.

These two patients were presented on account of some interesting features. The first patient had had a radical Killian operation performed which entirely failed to relieve the discharge of pus. A vaccine was prepared and administered, the first dose being given some six weeks ago; after several doses had been given there followed a pretty sharp reaction, following which there was a sudden cessation of discharge. It seemed to be a very marked effect of the autogenous vaccine.

The second patient was a boy eight years of age who had been referred from the eye to the throat department of the hospital. At that time the eye was swollen and entirely closed. The pus had broken through the bony wall of the nose so that when the incision was made through the soft parts the pus spread everywhere. During the operation, the dura was exposed for from half to three-quarters of an inch in the ethmoid region. It was impossible to get primary union, and after a breaking down of the closed incision it had been treated as an open wound, which has now practically closed.

DISCUSSION.

DR. FORBES inquired concerning the autogenous element in the vaccine.

DR. COFFIN replied that he could not recall off-hand the particular germ from the culture, but that it had been mixed with or added to a stock vaccine.

DR. DWYER said that in 1910 he had reported a large series of cases of this type, a relatively small class, which will clear up under vaccine treatment. Still, compared with the entire number, the number of those that clear up under vaccine is very large. He had seen cases of typical pansinusitis clear up under three or four weeks of such treatment. In one instance the patient was a clergyman and had it so badly that he could not officiate. He was slated for a double radical Killian, but this was obviated by the vaccine treatment. The crux of the case depends upon whether or not there is a good blood supply. If there is a good lymph supply you are liable to get a good result. It is the same old idea that is at the basis of Bier's hyperemic treatment. You increase the blood supply.

Dr. Coffin had referred to autogenous vaccines mixed with stock, i. e., an autogenous vaccine from the patient mixed with the. It has proved very efficacious in a number of those cases.

Laryngeal Case for Diagnosis. DR. FRANCIS W. WHITE.

This patient is sixty years of age and has been suffering from hoarseness for a year and a half. At first this hoarseness was intermittent but now it is present all the time.

Upon examination of the nose he was found to have a marked deviation of the septum and polypi, presenting in both nasal cavities. The X-ray showed a moderate pansinusitis, irrigation of the antra, brought out a small amount of thick pus. The Wassermann reaction was negative, uranlysis negative also. The gentleman who examined the larynx of the patient this evening, will remember that the right cord is involved which appears markedly edematous. This, however, is not the case, as it is too persistent for such a condition. The negative Wassermann while not absolutely proving the absence of a specific condition, must, however, receive due consideration. The age of the patient and the persistence of the condition leave but narrow confines for diagnosis, but during the period of observation the condition has not changed unfavorably and according to the statements of the patient he has less difficulty in phonating and his voice is somewhat clearer. He does not use his voice excessively in his vocation.

DISCUSSION.

DR. HARMON SMITH said that he had examined the case, and quoted a distinguished laryngologist who asserted that one should always view with suspicion any case of hoarseness in a man over 40 years of age, which had persisted for six months. In this particular instance, however, he could not see that the condition presented any indication of malignancy. It seems to be a polypoid condition of the true vocal cord; where such a condition has existed for a long time, one can reasonably eliminate malignancy.

He then cited the case of a clergyman who on a Sunday preached a sermon in which he displayed much eloquence and over-exerted himself vocally, so that the vocal cords became very edematous and one looked like a blister filled with fluid. In the case presented by Dr. White the cord had a polypoid appearance and was higher on one side than on the other, and one arytenoid moved differently from the other; there was no redness at the base and it did not project into the ventricle of Morgagni as might be expected. It was difficult to say just what was the condition. It seemed to be the case of a man whose vocation required excessive use of the voice, and probably he had had a sudden edema and bruising of one cord, and by continuing the use of his voice there had been no opportunity for it to become reduced; it might also be that the lymph infiltrated tissue had fallen over the border of the

cord and formed a polyp. Probably rest and slight local treatment would be the only thing that would benefit the condition, especially rest of the voice.

DR. FREUDENTHAL said that naturally one would first think of malignant neoplasm on looking at this case, but the idea of edema did not impress him as a satisfactory solution of the problem. He had recently treated a lady with a slight attack of grippe, who was in the habit of screaming at her children on occasion. When she returned for further treatment, she had a large flat hematoma over the right vocal cord, which disappeared without any treatment in a few weeks. Was it not probable that in this case also there might be a hematoma of the vocal cord?

DR. MCCULLAGH said that he had seen the patient about three and a half months before, and the condition had persisted all that time. Of course, the suspicion of malignancy was the first thought; but it was possible that in spite of the negative Wassermann reaction it might be specific. He agreed with Dr. Smith in that he had never before seen anything just like it.

Traumatic Stenosis of the Larynx. DR. FRANCIS W. WHITE.

In June of last summer this man's throat was cut and he was rushed at once to a hospital; a primary suturing was done and a tracheotomy tube was inserted. This was removed after three days and the man was then in the hospital for three or four weeks, before being sent home. He had some trouble in breathing all this time, and about a week after he had been home he was suddenly seized with severe dyspnea and fell unconscious. He was again rushed to a hospital and a tube was reinserted. This time he remained in the hospital for ten weeks and was sent home with the tube in place. For a while he went around fairly comfortably, but then developed a mucopurulent discharge from around the tube and into the pharynx. He was then brought to the Manhattan Eye, Ear and Throat Hospital and put to bed, and under treatment the suppurative process receded. On the 8th of January, last, on account of the marked stenosis throughout the larynx and trachea, a laryngofissure was performed. A quantity of fibrous tissue and granulation tissue was removed. In closing the wound, the lateral portions of the thyroid cartilage were not sutured, hoping that a false joint might be formed, thus giving a little more space for breathing. After the resultant inflammation receded, dilatation was begun, commencing with a laryngeal application and then a small intubation tube and gradually increasing in size, but it was very hard to get them in and they would not stay in on account of the contraction low down. After a fair sized opening was obtained, the method recommended by Iglaue was used.

This consists in using a short length of rubber catheter turned upon itself to form a U. The distal or free ends are then bound together by means of suture material eight or ten inches in length. From the center or in the bend another piece of suture material about the same length is made fast. A needle-eyed flexible probe is then threaded with a similar piece of suture material and after adequate local anesthesia, is introduced into the tracheotomy opening, is passed upward into the pharynx and then withdrawn through the mouth. The suture material close to the probe is then severed and is tied with the suture material from the center of the U-shaped catheter. Pulling upon that portion of the suture material passing from tracheotomy opening and rubber tubing is pulled into the mouth then the pharynx, larynx and neighboring portion of trachea, until the upper ends of the tubing are on a level with the arytenoids and the lower portion is in proximity to the tracheotomy opening. A sufficient length of suture material should be retained to allow winding it around the tracheotomy tube several times after it has been introduced, thus preventing a riding upward of the rubber after these turns around the canula have been made. The remaining portion of the suture material is then carried backward around the neck and held in place by a strip of adhesive plaster. The

suture material extending from the mouth is then carried upward and backward, and wound around the auricle and is held in place by a strip of adhesive plaster. In this particular instance a portion of a number 16 (French) catheter was used. This was left in place for three days and was left out for two days. Then a similar piece from number 18 (French) catheter was introduced and left for one week.

The piece of rubber tubing in place tonight was introduced yesterday. By this method of dilation not only is there a constant pressure due to the resiliency of the rubber, but there is also a pneumatic pressure due to the air contained within the ligated tubing, great care must be exercised not to have this piece of rubber tubing too long for if such is the case it either presents below the upper margin of the tracheotomy opening thus complicating the introduction of the canula, or else it will present too high in the larynx, thus materially interfering with deglutition.

Dr. White recalled an instance in which a patient was rushed to a general hospital and a tracheotomy performed. As a matter of fact an emergency thyrotomy was performed and the canula introduced due to the unnatural position of the canula. Irrigation, ulceration, and abscess formation ensued, followed by a sudden fatal termination shortly after. Greater stress should be laid upon the importance of this operation when being described to students as it is a not uncommon procedure especially in large centers, where much emergency work is done.

In reference to Dr. Smith's patient I remember distinctly the very excellent operation performed as I was present at the operation and saw the patient subsequently many times. It may be of interest to Dr. Smith to know that I saw this patient a few days ago narrowly escape being struck by an automobile, and when he reached the sidewalk to hear him denounce the driver in a not unfamiliar language, but fortunately very clear tones.

DISCUSSION.

Dr. Freudenthal told of a similar case at the Montefiore Home. The patient was suffering from Raynaud's disease, and thinking he was incurable, tried to commit suicide. Tracheotomy had to be done hastily. After that he would not allow any one to treat him, but finally he wanted to get rid of his canula. On examination his larynx was revealed to be a mass of cicatricial tissue, and it was very difficult to dilate it. Then an effort was made to dilate it with very small tubes under suspension laryngoscopy; finally, a small uterine dilator with three prongs was tried, and with that in situ the man could breathe very well; but unfortunately he gave up treatment, and does not want to have anything done for him. Such cases are very difficult to treat. Laryngostomy is the only solution in this case.

Dr. Guitman told of a case of stenosis caused not by trauma but by a malignant growth. It was very easily demonstrated by having the patient take barium and then using the fluoroscope; one could clearly see the communication from the esophagus to the trachea. Instead of using methylene blue, the same thing could be accomplished by the fluoroscope.

Dr. Harmon Smith told of a cut-throat case which he had presented some years previously, of Hebraic persuasion who had been driven to this act by persecutions in his locality. He was unsuccessful in his attempt, however, and only cut through the cartilage. Some bad surgery was performed on him at the time. He had cut one vocal cord from its attachment to the larynx. When he came under Dr. Smith's observation some months later, there was an open fistula in the larynx. He opened up the larynx and attached the vocal cord in place, and the man got along pretty well; but when presented before the Section he had an attack of stage fright and could not speak above a whisper. He had been observed from time to time during the last four or five years, and when last seen the cord that had been paralyzed had regained motion and was now almost equal to that on the opposite side. The man

is now a most successful tailor, has changed his attitude from pessimism to optimism, and is in very good shape.

Dr. Smith said that he had suggested to Dr. White the possibility of taking a piece of cartilage from the nasal septum and instead of trying to make tracheal rings, to suture them in place so that they would brace against the posterior part of the trachea, as rafters do in a house over which he could attach the skin, and while that would not give a well rounded contour it would prevent the collapse of the tissue anteriorly. It was merely a suggestion, but there seemed no reason why a bit of cartilage from the nasal septum or from one of the ribs would not suffice, and such a procedure might bring about a quicker result than dilatation.

DR. FORBES spoke of the advisability of having such patients referred to the laryngologists when they are admitted to the general hospital. Over on the other side all the neck cases were referred to the laryngologists, and measures were taken to prevent such conditions as had occurred in this case.

Stricture of the Esophagus Complicated by Lung Abscess and Empyema.

DR. JOHN D. KERNAN.

This man, a Russian, about 30 years old, was admitted to the Manhattan Eye, Ear and Throat Hospital in May, 1919, with the following history. Two years before, he had taken a drink of carbolic acid in mistake for whiskey. He recovered from the primary poisoning; then, in a short time, noticed a difficulty in swallowing, which increased and brought him to my service at Bellevue Hospital six months before, that is, eighteen months after the primary accident. At Bellevue he was successfully dilated so that he could swallow, and was discharged. He was directed to report for treatment, but did so irregularly and the stricture became narrower. To have him under better control, he was admitted to Manhattan. In the hospital, sounds were passed every other day until June 4. That day the treatment seemed to pain him, so all manipulation was omitted the following days. June 9, five days after any treatment, he had a chill and a rise of temperature to 105°. Daily thereafter he had a temperature between 104 and 105° in the afternoon. He complained of severe pain in his chest and physical signs showed fluid in his right pleural cavity, and the next day a small amount of foul fluid was drawn off through a needle. The patient was by this time in an extremely serious condition. It was evident that all his food was being regurgitated or coughed up. As to which route the food chose in returning, it is hard to decide. It was raised after severe attacks of coughing, and appeared to be brought up from the lungs, but it is so hard to believe that the patient could have survived the rupture of such a foul empyema into the lung that I conclude the straining of the cough forced the pus back into the esophagus, whence it was regurgitated.

To relieve the starvation, a gastrostomy was decided upon. This was done under local anesthesia by Dr. Phelps, and at the same time a rib was resected to drain the empyema. As the patient left the table, the surgeon remarked he would not live half an hour. Well, he did live, and here he is. He made a smooth recovery and gained weight every day. He was discharged August 11th. During the summer he fed himself through his gastrostomy tube.

He was readmitted in October for another attempt to dilate the stricture. There were found to be two; one, 20 cm. from the stricture, was easily overcome. From that point down to his cardia, the whole esophagus was strictured. The cardia was so tight that no sound could be passed through it until the plan used in strictures of the urethra was adopted of passing a succession of filiform bougies. One of them went through; the end was fished out through the gastrostomy wound and a thread pulled through. Following this guide, the lumen has been gradually enlarged. He now takes a 19 French and can swallow semi-solid food.

He was discharged from the hospital in March. Then he came back to the clinic for the passage of sounds until two weeks ago, still having in place the gastrostomy tube. One morning he came into the hospital in severe pain. Examination showed a tumor about the gastrostomy wound, which disappeared on withdrawal of the tube and the discharge of a large amount of fluid. Evidently a fistula had formed between the end of the esophagus and the abdominal wound and this tract had been distended by fluid which failed to pass on into his stomach. All he swallowed came out through the abdominal wound. The tube was now left out, the wound gradually closed, and he now swallows well. He was dilated by sight.

Points for notice.

Don't hurry dilatation.

Importance of gastrostomy by relieving esophagus and keeping up condition.

Don't have gastrostomy in too long.

Patience.

Transplantation of Mucous Membrane from the Cheek into the Nose. DR. WOLFF FREUDENTHAL.

This patient consulted me, complaining of dryness of the nose and throat. Examination revealed an atrophic rhinitis, the nose being filled with scabs which were dry and foul-smelling, resembling ozena. Both antra were washed out through the inferior meatus, but there was no pus. The mucous membrane on both sides was affected, and it did not seem wise to do a radical operation. What these patients need is a new mucous membrane, and how is that to be secured? All those who do eye work will recall that in certain cases of trachoma a transplantation has been made of mucous membrane from the cheek into the conjunctiva, and in certain instances the result has been very good. This suggested a similar procedure for the nasal condition, in the hope of securing a new and healthy tissue. The procedure was simple, consisting first of removing the mucous membrane from the septum, and replacing it with a piece removed from the inner side of the cheek. The piece taken from the cheek was twice as large as that removed from the septum, to allow for shinkage, which is considerable in healthy tissue. It was then trimmed carefully to remove all the fat and all the capillaries, and was dipped frequently into warm saline to lessen the tendency to shrink. It was then slipped into the place prepared for it and held in place for a few minutes with a Killian forceps by pressure; then a small piece of cotton was placed in the nose and the patient was put to bed for three days. Fortunately the patient was very quiet and did not sneeze, and the new mucous membrane adhered and healed into place. There was some little reaction, but nothing severe. The piece of membrane removed from the cheek was not quite large enough, and there was a little defect in the nasal lining, which is not visible now. The right side is full of scabs still, but the left side is perfectly clear.

In another case, a woman was similarly treated, and that side of the nose is perfectly free. I have not seen her again.

This man has now been under treatment for eight weeks, and the improvement in his condition is remarkable. Not enough of this work has been done to predict the future for it, but the method is well worth trying. One must be careful not to remove too thick a piece of mucous membrane, in fact all that is needed is the epithelium. There was a slight resultant inflammation inside the cheek, but that healed up very nicely and there was no further difficulty. The other side of the nose will probably be operated in a few weeks, and if possible the case will be again presented later.

An Unusual Case of Syphiloma of the Nose and Naso-pharynx. DR. HARMON SMITH.

In presenting this case Dr. Smith said that it was the largest syphiloma he had ever seen, occupying both sides of the nose and extending into the naso-pharynx.

The patient, Bernhard T., aged 54, was a bartender. He had been married for twenty-five years, but had had no children nor had his wife had any miscarriages. He gave a history of having had chancre twenty-seven years previously, at which time he received treatment for three months. After that he had sores on his lips at times, for which he would take medicine for three months at a time. Sometimes years would elapse between these manifestations. Before the present trouble, he had had no sickness for years.

On October 31, 1919, he reported to his clinic at the Manhattan Eye, Ear and Throat Hospital, stating that about fifteen months previously he had begun to have trouble in breathing, which was followed by double otitis media purulenta acuta. He was likewise treated for catarrh of the nose.

His Wassermann reaction was four plus, and he was given a few injections of salvarsan, which did not result in improvement .

In November, 1919, he had complete nasal obstruction, but had no pain. There was some bleeding, especially when he blew his nose, but he never had to have the nose packed, nor was there any bleeding from the mouth. Both sides of the nose were equally occluded and associated with slight nasal discharge.

Then he was given intramuscular injections of mercury and increasing doses of iodide, up to 480 grains a day, none of which had any effect. A piece was removed for examination, and the microscopist reported it to be syphilis.

Early in February a very large tumor appeared in the right submaxillary region, the size of an orange. Dr. Farr aspirated it, withdrawing pus, and the tumor disappeared. The rest of the tumor mass has never showed any regression. A few weeks ago he received an injection of monochloracetic acid, but it had no effect. In February some one suggested spirocide and he was given six treatments by inhalation. In March he had influenza and lost thirty pounds. A culture from the nose showed only staphylococcus. During all this time mercurial and potassium iodid treatment was pushed to the limit.

The case is a striking exemplification of the fact that the ultima thule has not yet been reached in the treatment of syphilis, as nothing so far administered has had the slightest effect upon the tumor.

Paper: Intravenous Medication in Nose and Throat Cases. DR. JAMES G. DWYER.

DISCUSSION.

DR. HARMON SMITH said that the notes made on this case showed that the patient received twelve injections of 10 per cent sodium iodide solution intravenously, starting with five grains and increasing to 10 grains three times a week; and also received bichloride of mercury, potassium iodide, etc. He had not followed the case all the way through, but Dr. Farr observed it; and whereas in the beginning the man had a four plus reaction, the last Wasserman test was negative, showing that there has been some change in regard to the blood condition; but there had been no change whatever in regard to the tumor. Before the introduction of salvarsan many of these cases of laryngeal syphilis were treated with iodide, and when the patients showed symptoms of iodism on 30 or 40 grains of iodide of potassium three times a day; if the dose were increased to 60 or 80 grains the patients would show no symptoms whatever, and many of them took from 360 to 480 grains a day. This patient had been run up to 480 grains a day, which should have been sufficient to make an impression on the tumor.

A New Method of Exposing the Pituitary: With Report of a Case. DR. E. ROSS FAULKNER.

It always seems a little presumptuous in the present day to describe any operative procedure as new, especially when the innovation consists of an anatomical route. Various methods of approaching the sella turcica for the purpose of carrying out operative treatment on the pituitary

gland have been described. The intracranial route has been practiced by Frazier, McArthur, Adson, and others. The intracranial route either through the nostril or through the anterior choannae after lifting up the soft tissues, has been advocated and practiced by Hirsch, Cushing, and others.

The method of approach which I used in this case may be described as the trans-ethmoid route. The procedure is as follows: Make the initial incision the same as for a radical frontal operation, removing rather more of the nasal process than is necessary in the sinus operation. Next, do a complete exenteration of ethmoids down to the anterior wall of the sphenoid. The posterior part of the septum is then removed with lifting forceps. This gives an exposure of the anterior wall of both sphenoids. Puncture both sphenoids and insert a lifting forceps with a blade in each opening, and remove the septum between the sphenoids. The anterior wall and floor of the ethmoid can be removed with forceps. After thoroughly drying the field, the floor of the sella will be in plain view. An instrument inserted through the nostril can be carefully observed while the floor of the sella is being removed.

I found the operation comparatively easy. In the one case in which I tried it, an area the size of a nickel was exposed. The operation was performed on a case with symptoms of pressure in the pituitary region and was recommended by several men who had had the case under observation, merely with the possible chance of finding some conditions of the pituitary amenable to operation or at least to relieve pressure. The patient had suffered from bitemporal hemianopia, steadily growing worse in the last two years. Two weeks previous to operation she began to have severe headaches and occasional vomiting. The pupils became dilated a week later. Several X-ray examinations showed some enlargement in the sella.

On exposing the pituitary by the method described above, there was nothing found to account for the symptoms; there was no evidence of its being under any pressure. The immediate effect of the operation seemed to be beneficial; the dilatation of the pupils disappeared, and there was less vomiting for a week or ten days. However, the old symptoms soon returned, and about four weeks later she went into coma.

DISCUSSION.

DR. IMPERATORI said that the method was a very ingenious one, but that Dr. Faulkner mentioned that the sella turcica was rather enlarged. Was that the reason for operating the case? i. e., because the X-ray had shown some enlargement? In a great many cases where the X-ray plates showed enlargement of the sella turcica, autopsy had shown no enlargement of the pituitary, but there was a tumor elsewhere in the brain.

DR. LAW said such a wide variation in the size and shape of the sella is shown on the X-ray plates that it is difficult to know just what the normal sella shadow is. We may see elongated processes, shortened processes, or a wide and deep sella, and yet have no symptoms to account for the change. Therefore we can assume that there may exist a wide variation in this region which may yet be considered normal to the particular individual. The change must be very marked before we can state that pathology exists. A tumor mass is not seen unless it contains some lime salts, hence there must be a change in the surrounding bony parts to make a diagnosis possible. We may have tumor formation or pituitary change present, but unless it has altered the neighboring bony parts no perceptible change is noted in the X-ray plate. These plates must be made stereoscopic, and the tube actually centered over the sella or some distortion of the outline will occur.

SECTION ON OTOLOGY.

May 14, 1920.

Sigmoid Sinus Thrombosis Involving the Petrosals. (Two Cases.) DR. SAMUEL J. KOPETSKY.

DISCUSSION.

In referring to the case of primary bulb thrombosis, Dr. Alfred Kahn said that he had listened to the paper with a great deal of interest; that it was settled in his mind that in order to be in a fair position to "size up" this class of cases one should absolutely see the sick one. A true state of affairs could not be arrived at from hearing the symptoms of such a case described. He had recently seen a case present similar symptoms to the doctors; and he believed that these cases were diagnosed as primary bulb thrombosis chiefly on the high and low vibratory temperature. All cases presenting such a type of temperature did not necessarily mean jugular involvement. He thought it was a bad practice to diagnose these cases from the temperature alone. Of course Dr. Kopetsky built up the diagnosis when he found germs in the blood stream and on the blood count showing, but in the last analysis jugular bulb thrombosis is made on the vibratory temperature and chill. Dr. Kahn's case, seen recently, illustrated this problem. A child who was suffering from measles contracted pneumonia and had a perforating ulcer of the cheek, together with this high low vibratory temperature. Dr. Northrup, who had seen the case a day previously, gave a bad prognosis. Both ears were discharging and there was tenderness over both mastoids. The mastoid condition, however, seemed to him as though it might clear up, even though the patient was running a temperature of 105° down and up. It did not appear to be a case of jugular bulb involvement, but it had all the characteristic symptoms; but even supposing it were, what was to be done about it? Which jugular should be operated upon first? If the jugular operation were done on one side and involvement were not found, then you were logically bound to explore the other side. Would you ligate both jugulars? Dr. Kahn said that he stood pat. The child made an uneventful recovery and is now perfectly well.

Referring to the cross incision, Dr. Kahn said that it seemed to him bad practice, but that he had not formed any final opinion. He thought there was a good deal to be said on both sides, and that the matter would eventually have to be thoroughly thrashed out. The mere fact of cutting off the stream of blood in the vessel would not eradicate the infection. The clot would still be there and might become infected all the same.

DR. FOWLER cited a case which had a bearing on the discussion whether it is right at times to tie off the jugular mainly on the strength of the temperature chart.

It is not fair to Dr. Kopetsky to think that the diagnosis is made on the temperature alone: It is based on two points: First, a high septic temperature following an otitis. Second, the careful exclusion of all other possible causes of this septic temperature.

A case seen recently illustrates this. The child had had a simple mastoid operation; the bony sinus wall had been destroyed by disease but the vessel itself showed granulations and no definite sign of thrombus. After three days the temperature shot up and ran a septic curve. The child's condition became rapidly worse and there was a delay in getting a report from the blood culture.

The most careful examinations made at this time showed no signs of lung trouble or any other cause for the irregular temperature. The decision was made to tie off the jugular. After the operation the temperature dropped from 105 to normal and the child made an uneventful recovery. That might not be justified in many cases but in this one it seemed to be the solution of the problem. It depends on how serious you feel the tying off of the jugular vein to be. In no case that Dr. Fowler had seen had it given bad results. Dr. Kopetsky had spoken of a case where the problem arose which ear should be operated upon. It would be interesting to hear his opinion on that.

DR. BRAUN was very sorry that he had come too late to hear the reports of Dr. Kopetsky's cases. He said that the case to which Dr. Fowler had referred was not clear to him, and he would like to know upon what the doctor based his diagnosis of sinus thrombosis in that case. He himself had had two or three cases of children where after mastoid operation the temperature ran a typical course of sinus thrombosis. In one of them the patient, a child of three, had a double mastoid and for five weeks after operation the temperature ran between subnormal and 105° F. The blood culture was repeatedly negative, and it was thought wisest to do nothing. The condition cleared up.

In reply to an inquiry from Dr. Herzog, Dr. Braun said that the leucocyte count was not constant in all the cases to which he had referred. In some cases the leucocytes were 17,000 to 18,000; in others, 10,000 to 11,000.

DR. KERNAN referred to a case seen during the winter which presented the same problem, and he hoped for some information. The sickness began with a severe follicular tonsillitis. It did not resolve and get well in a few days as they usually do, but the child began to run a septic temperature of 104 to 105° in the afternoon. In seeking the cause of the temperature, the blood was found to contain streptococcis. The ears began to run and continued to do so for several weeks; the temperature also continued for several weeks, and the blood culture remained positive. The mastoids were never tender, however, and finally it all cleared up. The drum membranes had very large openings and the ears drained well, and there was no bulging of the posterior walls. The problem presented was running ears, negative mastoids, blood culture positive, and elevation of temperature, yet the case healed without operation. In this case also there would have been great difficulty in deciding which side to explore for sinus trouble.

DR. BRAUN told of a child he had been called to see who had a discharging ear, a typical septic temperature, and a positive blood culture. The report stated that one plate showed a few colonies. The other plates were sterile. The case did not seem to be a very conclusive one, and he advised waiting. Two or three days later, the child developed an attack of acute articular rheumatism, and the condition cleared up.

DR. HAYS said that he had been much interested in the second case. It was seldom that one saw an edema of the face develop as in this case. It looked like a case of mumps except that the swelling extended beyond the parotid regions. The simplest explanation seemed to be that there was some circulatory disturbance due to the ligation of the jugular. Of course anyone could call it anglo-neurotic edema but there was no more excuse for calling it that than anything else. Both he and Dr. Kopetsky were disturbed as to what might happen as the child had been through a stormy course and it was very gratifying to have the edema clear up.

Dr. Kahn had spoken of the difficulty in differentiating which sinus is affected when both mastoids have been operated upon. During the winter, Dr. Kopetsky had seen a child in consultation with Dr. Hays. Both ears had been operated upon. Both sinuses were exposed. The child jumped a temperature of 106° and it was a grave question as to which sinus to expose. It was suggested that the examination of the eye grounds might clear up the matter as it is known that the retinal vessels are often engorged on the affected side. Here we found a hazy disc on the left side. The left jugular was ligated and the sinus cleaned out. The child recovered after a transfusion and an infection of the right foot. As to positive blood cultures, Dr. Hays said that he would feel very much disturbed if he had an ear condition with a positive blood culture. Even if the condition cleared up for the time being, there was always the possibility of the clot breaking down and further trouble arising.

DR. KOPETSKY said that he did not understand the point that Dr. Kahn wanted to make in reference to the first case, nor did he understand the argument advanced as analogous to what he had presented in his case.

This child was sick and was under competent medical supervision; and a competent medical consultant had reported everything negative except the ear. A blood examination by a competent man gave a report of positive blood culture, and the physical examination showed prostration and the beginning signs of cerebral irritation. The face, through the swelling of the lids and edema of the conjunctive, showed signs which are ordinarily recognized as coming from involvement of the cavernous sinus.

With such a clinical picture, he, for one, was not content to sit back and wait; for, if Dr. McKernon's work on primary bulb thrombosis is worth anything at all as a basis for conclusions, then this case required operative interference; and Dr. Kopetsky stressed the fact that, in primary bulb thrombosis, operation is indicated on the blood vessel whether the mastoid is involved or not if a diagnosis is possible. The cases that were spoken of in the discussion, which developed articular rheumatism or other lesions and conditions which account for the septic temperature, are not in the same category as this case; for this case developed no such conditions and cleared up after operative intervention. The vein was not ligated, but was resected. Had subsequent infection occurred, it would have been easy enough to open the neck wound and put in a drain and do just the thing that Dr. Kahn suggested be done in the first place, whereas by having followed the procedure as outlined in the report of the case, this was found unnecessary, and consequently there was very little scarring and a beautiful after effect.

For this opening of the wound, no anesthetic is usually necessary.

Dr. Hays has spoken on the subject of the location of the side when both sides were involved, in a case seen with him. In that case, the findings in the eye grounds solved the question, but since then, two cases have occurred in which no differences were found in the fundi. When differences are found, the diagnosis is relatively easy as to which side is thrombosed. In the other cases, however, the determining signs were found by going over the notes of the original mastoid operations, and that side was operated upon in which the bone necrosis had reached and involved the sinus wall. In the second case, before opening the sinus a needle was placed into the vein and no blood was withdrawn upon aspiration. The conclusion was therefore apparent that the vein was thrombosed, which was verified in a few minutes upon incising the vein.

The third case is still in the hospital. Here, the child had an up and down temperature for a week, after having had a running ear for seven weeks. During the last week, with the up and down temperature, a general septic appearance of the child was apparent. There were absolutely no signs of mastoid involvement on either side. A blood culture was taken and streptococcus hemolyticus was found. Here, then, was a case in which there was no mastoiditis present clinically on either side, in which there was a positive blood culture, and in which there was a double otitis media purulenta and a child who was getting progressively more septic.

There was nothing left to do but to go in, and as neither side showed an ear which was discharging under pressure, both had to be examined surgically. One cannot rely upon the history; one cannot rely upon the attendants. In view of the desperate situation, exploration was decided upon in an effort to determine, at the operating table, on which side the thrombosis was. At operation, a normal mastoid was found on one side, and a small quantity of pus on the other. Because of the more advanced disease on the second side, on this side the sinus was submitted to exploration. When a plug was introduced above the knee, before the vein was opened, the entire vein collapsed. Thereafter the sinus was opened and the usual procedure of resection of the internal jugular was performed. The case is still undetermined.

Dr. Kopetsky said he could duplicate the case referred to by Dr. A. Braun, who told of a patient that had run a temperature for two weeks

and had then cleared up. He had had a case with Dr. Pisek in which the child ran a temperature from subnormal to 103 or 104° for weeks. It was a case in which mastoiditis had followed typhoid, and repeated cultures, both for typhoid and streptococcus hemolyticus, were negative. There was no evidence of sinus thrombosis or of meningitis, and it was decided to pursue a waiting policy. For over a month the child ran a temperature, and then suddenly came down to normal and recovery set in.

Differential blood count is not of determining importance in such cases. Dr. Kopetsky reiterated that he does not operate on the temperature chart alone or on the differential count, but on the temperature chart plus otoscopic examination and a positive blood culture; and if, in addition, a case shows meningeal signs and edema of the eyelids, more marked on the same side, injection and edema of the conjunctive on the side of the lesion, then, certainly, one is not warranted in procrastinating.

A Case of Brain Abscess. DR. C. M. SAUTTER (By invitation).

DISCUSSION.

DR. BRAUN said that Dr. Sautter was to be complimented on the result in the case reported. Abscesses running such an acute course, usually do badly. He then reported briefly a case which was under his care. The patient was a girl about nine years of age on whom he did a simple mastoid operation some two months ago. She did very well for five weeks and then the temperature went suddenly to 105°, she vomited, had headache, and diplopia. A neurologist saw her on the evening of that day. When he saw her, she had Jacksonian twitching of the opposite face and arm. He made a diagnosis of abscess in the motor cortex. On the following day, the temperature came down, the headache and diplopia disappeared, and she was apparently well for three days. Then the headache recurred without rise of temperature. The eyegrounds were normal. A spinal puncture was done and showed 10 cells to the cubic millimeter of spinal fluid. Then she developed a dysmetria and adiadokokimesis of the arm on the same side. Another spinal puncture was done which showed an increase of cells to 110 per cubic millimeter. She was then operated upon and an abscess was found in the cerebellum from which 4 ounces of pus were evacuated. The abscess was so large that it seemed doubtful whether proper drainage could be secured through the incision which was made in front of the sinus. A double ligation of the sinus was done, and the sinus divided between the ligatures. The ligatures did not hold, the traction of the dura on the sinus wall causing them to slip off. The sinus was plugged off at each end. The following day the child developed a paralysis of the external rectus on both sides, a partial facial paralysis on the opposite side. That was two weeks ago, and she is apparently doing well, though the external rectus paralysis is still present on both sides.

Hemorrhage from the Ear. DR. HAROLD HAYS.

DISCUSSION.

DR. HERZIG told of a case that he saw some eight or nine years ago. That of a man (38 years old) with acute otitis media, which he incised in which bleeding took place and continued in spite of everything that could be done to stop it. The man had a blood pressure of over 200 with a chronic interstitial nephritis and who died 2 weeks later. The ear kept bleeding until death occurred.

DR. DWYER asked if he was correct in understanding that Dr. Guttman said the diagnosis was squamous celled sarcoma. There is no such sarcoma.

DR. GUTTMAN said that the diagnosis he got from the pathologist was squamous cell carcinoma and not sarcoma.

Referring to Dr. Hay's case, DR. BRAUN said that hemorrhage following paracentesis is probably due to the fact that the jugular bulb lies bare in the middle-ear. He then cited a case of uncontrollable hemorr-

hage following a mastoid operation, done two years ago. There was no bleeding after paracentesis, but the patient developed a mastoid. He did not bleed at the time of operation, but on the third day he began to bleed through the mastoid packing. This was removed and the wound repacked tightly, several times. He bled through the packing and finally he bled through the Eustachian tube into the naso-pharynx. The hemoglobin went down to 50 per cent. He was taken to the operating table, the packing removed, and the wound again repacked tightly and sewed up. He was then given a citrate transfusion. Unfortunately, however, he developed a suppression of urine as the result of the transfusion, and died in uremic coma.

DR. LEDERMAN told of two cases in which he had seen similar trouble with the ear, one of them a man 68 years of age with acute otitis in which a paracentesis was done. He bled rather profusely, so that the blood came through the packing. This continued for forty-eight hours before it was checked, but it was probably due to an atheromatous condition. The man had no bad results excepting that the pressure of the packing caused some vertigo. In some instances where the incision is made without an anesthetic the restlessness of the patient may cause the knife to strike the posterior wall, resulting in a hemorrhage from the mucous membrane. In the second case there was a history of hemophilia. The woman gave a history of having been operated upon for a large polyp due to a chronic suppurative otitis some ten years previously, at which time she bled very profusely. She presented herself with a large mass projecting from the canal, which macroscopically resembled a fibrous polyp. Bearing her history in mind, she was given calcium chloride for a week before removing the mass, which proved to be a fibroma. The growth was removed with its pedicle. There was very little bleeding at the time and all seemed to be going well, when gradually a little oozing appeared. Several remedies were tried without avail, and finally she was given 10 cc. horse serum (which had been provided in case of trouble), and in twenty-four hours the bleeding ceased. The canal was tamponed for fear of further trouble and the patient was sent to the Polyclinic Hospital for observation. Within twenty-four hours after the injection a hemorrhagic urticaria appeared on the arms and legs. After twenty-four hours the packing was removed, but as some oozing was noted it was replaced and there was no further hemorrhage. In this instance there was no doubt of the hemophilia as the patient stated that whenever she bruised herself there appeared at the site large dark blue area. No unpleasantness followed the packing of the canal and suppuration ceased.

Paper: Logical Cause, Pathology, and Treatment of Brain Lesions.
DR. ALFRED KAHN.

DISCUSSION.

DR. HAYS said that Dr. Kahn had presented a very practical problem so far as the general cause of transfusion was concerned and the general question of combating infection. How far this applied to any specific infection of the brain or meninges, was open to question, for most of this experimental work was done in the peritoneal cavity. When it comes to brain abscess or closed meninges, or meningitis following an ear infection where the trouble starts from a small focus and spreads, it is another matter. How that is to be combated by general antitoxins is not clear. We may increase the patient's resistance; but the infection is usually localized. That we know. Dr. Sautter's case was an illustration. No matter how much we increase the resistance, unless there is some local interference it will not have any effect.

DR. MAYBAUM considered the paper presented by Dr. Kahn very interesting. Judging from his own experience at the present time, he questioned the practical value of the influence of treatment directed to systemic infection accompanying a localized or diffuse brain infection. We do not know of the intimate relation which exists between the circulatory and cerebro-spinal system and that the interchanging of fluids

between these two systems probably takes place in the choroid plexus. Urotropin, for example, administered internally, can be recovered in the spinal fluid. Possibly further studies along the lines indicated by Dr. Kahn may bring results; but the question of the degree and the character of the intracranial complication remains the factor of prime importance.

DR. KAHN, closing the discussion, said that the usual belief naturally would be that the donor might become infected, and that it was for this reason that the method had received its principal objection; but his experiments demonstrated that the donor did not run the extreme risk that might be imagined. He suggested that criminals or the hopelessly insane might be used for this purpose. Where a valuable life was at stake anything offering a possible chance should be done.

Dr. Kahn said that he did not think he understood Dr. Maybaum's question, but he would endeavor to answer it according to his understanding. In the last analysis we must remember that all fluids (spinal fluid, etc.), come from the blood; and it is therefore by changing the blood by putting the blood in an anti-toxic state that all cell activity throughout the whole system is saturated with this anti-toxic fluid. This is thoroughly illustrated especially in diphtheria. Finally Dr. Kahn wished to state that to anyone giving deep serious thought to the process of death and recovery from the diseases covered in his paper, they could only finally logically arrive at the conclusion that death did not come from the local process, but that it was due to the absorption of toxins in a dose sufficient to kill.

DR. CHAMBERS congratulated Dr. Kahn on the facility with which the transfusion could be performed by his methods. One man could do it alone. A good many years ago he had been interested in the treatment of curing aneurysm by inserting electric wires into the tumor with the idea of coagulating the blood, and he experimented with animals. He found the vessels very tolerant to instrumentation. Experiments were made on cats and dogs. If as much manipulation could be done with the vessels of human beings this method of Dr. Kahn will prove a great advance.

DR. KAHN said that as soon as the period was reached, though it might be some time off, when one can inject animal blood into human veins, the questions of all infections will be solved. Someone will do it eventually, for it is only a question of the chemical contents of the blood.

A Discussion of the Pathology and Anatomic Cure of Chronic Purulent Otitis Media, with a Suggested Method of Effective Treatment.
DR. J. G. CALLISON.

Chronic purulent otitis media is one of the most hopeless conditions that comes before the otologist for professional consideration. The discussion of the subject in textbooks devoted to Otology is entirely unsatisfying, excepting as it deals with operative procedures. Current periodical medical literature throws no additional light on the subject. The only procedure suggested with any assurance of success is the radical mastoid operation. Were this method sure of effecting a cure and were it entirely free from danger, the otologist would at least have some positive advice for those appealing for treatment. But the chances of failure of success in operating and the element of danger to the life of the patient, is enough to prevent most men from advising a radical mastoid operation except in those cases where bone necrosis from one cause or another has created conditions that render operation imperative. Also it is well within the knowledge of the members of the profession that those patients who have had a radical mastoid operation must thereafter be more or less constantly under the care of a specialist. The hearing in such cases is usually much worse than before the operation, and excepting for the freedom from danger to his life the patient who has undergone the radical mastoid operation is on the average but little

better off than before, and from an economic standpoint his condition may be worse.

The anatomy of the middle ear is of interest in this connection only so far as it deals with the lining of the cavity, which must be materially altered to effect an anatomic cure of purulent otitis media. On the question of a lining mucous membrane for the middle ear, there is no agreement among the various authorities.

The author then quotes Kerrison, Dench, Piersol, and others on the subject of the lining of the middle ear, and continues: While these anatomical descriptions of the mucous membrane lining the middle ear do not agree among themselves, they seem to agree on two points: That the epithelium lining the cavity is probably not of the squamous variety but of some form of columnar or low cuboidal epithelium; and also that there are present some glands of a simple type which they all agree in calling mucous glands. In discussing the anatomic cure of chronic purulent otitis media it will be shown how it is necessary to destroy these glands and alter the type of epithelium.

After a brief reference to the pathological condition revealed in performing the radical mastoid operation, the author takes up the question of the anatomic cure of chronic purulent otitis media which cannot be said to have been effected until there is a complete dermatization of the promontory and all exposed areas extending from the otitis opening of the Eustachian tube. To effect this a complete destruction of all granulation tissue is necessary. There must also be a destruction of the columnar and cuboidal epithelium lining the tympanic cavity, together with all the mucous and serous glands present, and a simultaneous extension from the external auditory canal over the exposed areas. At the same time, the bacterial flora present in the middle ear must be eliminated or reduced to a minimum. It is also desirable that the otitic end of the Eustachian tube be healed off by adhesions and cicatrization so as to completely separate the pharynx from the middle ear space.

It has seemed to the author that if this destruction of granulation tissue could be accomplished and the middle ear cavity then treated with some drug that was antiseptic and at the same time penetrating and diffusible, a drug non-coagulating to proteids, it ought to be possible to secure a very high percentage of cures. As the removal of the granulation tissue by operative means is not possible, it must be done by the application of some drug. For this purpose a saturated solution of nitrate of silver is without a rival. It is efficient in destroying the granulation material with which it comes in contact, but does not penetrate deeply enough to carry any possible danger to the delicate structures of the internal ear. Fused silver will not take the place of the saturated solution of nitrate of silver in this work. Where it becomes necessary to reach spaces not accessible to direct application a solution must be used so that it will spread laterally to parts not directly reached in the application.

As disinfecting agents both penetrating and diffusible, there seem to be four drugs worthy of consideration—two old and two new. The old drugs are phenol and tincture of iodine; the new ones; the new ones are acriflavine and murcurochrome-220. Acriflavine is diamino-methyl-acridine chloride, acridine being one of the coal tar basic dyes and said to be highly penetrating and antiseptic in its qualities. Because of these qualities it is being used in bladder and pelvis of the kidney infections and, with some apparent success, in the treatment of acute gonorrhea. Murcurochrome-220 is obtained by substituting an atom of mercury in the molecule of dibromfluorescein, this latter drug being one of the eosin group of coal tar dyes. It is claimed by the Brady Urological Institute of Johns Hopkins University, where it was developed, to have the penetrability of the dibromfluorescein and the antiseptic qualities of the mercury.

These drugs must all be used in a vehicle of fairly high alcoholic content, because of the tendency of aqueous solutions to stimulate the formation of granulation tissue. Iodine and phenol are both miscible with alcohol and dispensible in combination, and the following prescription has been used in these investigations: Tincture iodine, gtt xv; Phenol, 95% gtt xv; Alcohol, dr. iv; Water, qs., ad. oz. j.

A series of about 25 private patients have been used in this work, supplemented by a few of the more intelligent clinic patients. So far the treatment has been uniformly successful in effecting a cure, although some apparently very hopeless patients have been included in the list.

Procedure: Where possible, patients are seen at intervals of from four to seven days. The ear is carefully cleaned and dried with cotton applicators. If pus is hidden in the recesses of the middle ear as much as possible is removed by suction and the ear again carefully dried. Then, under direct vision, the saturated solution of nitrate of silver is carefully applied to the fundus, allowing it to penetrate as far as possible beneath the edges of the drum remnants; and it is applied also as deeply as possible in the Eustachian tube with a thin applicator, cotton-wound. In *exceptional cases* this procedure will cause pain, and with these patients it is well to begin with a 25 per cent solution and increase the concentration to 50 per cent, and then to a saturated solution as the patient will permit.

If a free discharge of pus is present, the patient is instructed to irrigate the ear once or twice a day with boric acid, as the condition may indicate. After irrigation the ear is dried very carefully with cotton on a toothpick, and about five drops of the above solution placed in the ear. As the purulent discharge decreases in amount the irrigations are discontinued, and later the drops are used but once a day. Otherwise the treatment is continued until long after the ear seems to be dry. The time required to effect a cure by this method of treatment has varied from a few weeks to several months, depending on the condition of the ear and the faithfulness with which the patient has carried out the treatment. It will not, however, average longer than the time required for the post-operative treatment of a radical mastoid operation, and there will be a larger percentage of absolute cures.

So far, there have been no returns of the purulent discharge, but the time during which this form of treatment has been used—one year—is too short for the failure of recurrences to carry great weight.

In the treatment of chronic purulent otitis media the conservation of hearing is not the first consideration, although an important one. In the patients in this series of cases, no complete record of the effect on the hearing has been kept, but in practically all the cases there has been an improvment so marked that the patients have spoken of it. Those patients who have been under observation for a time after the treatment of the purulent ear has been completed—as in patients with catarrhal deafness in the other ear—have also observed a continuing improvement as the connective tissue over the promontory has had time to be absorbed. Such a change is to be expected as long as there is a thinning of the pad of connective tissue over the promontory.

The paper is presented as a record of careful personal judgment, the author being convinced that the method of treatment has sufficient merit to justify those who are dissatisfied with present results in giving it a thorough trial. No claim is made that it will cure all cases of chronic purulent otitis media only that it has cured all of the small series of cases upon which it has been tried. Of course certain well recognized conditions must come to operation, but there is a large class of cases of chronic purulent ears with such good hearing that under no circumstances is a radical mastoid operation justifiable. Curative treatment is directed to this class.

In addition to the series of patients treated with the saturated solution of nitrate of silver and phenol and tincture of iodine combination,

a few patients have been treated with murcurochrome-220. Aside from some initial difficulty in getting the murcurochrome-220 into an alcoholic solution, the results have been most happy. Extreme care must be used to avoid the disagreeable eosin staining of the surrounding tissues.

The article closed with detailed histories of three cases treated by this method—the first a possible case of bone necrosis; the second a possible case of cholesteatoma; and the third, an old indolent running ear.

DISCUSSION.

DR. LYNAH said that Dr. Callison had given us a very valuable aid in the cure of chronic otitis media cases who refused operation, and especially in those patients who had fairly good hearing, but came to seek relief to the constant discharge from the ear. He himself had tried the saturated solution of nitrate of silver on several cases, and it certainly had done all that Dr. Callison claimed for it. He had not tried any cases with the prescription advised by Dr. Callison, for the silver alone had given satisfactory results.

DR. HAYS said that the profession is becoming more conservative in the treatment of radical mastoids than it used to be, and not so many cases of chronic otitis media are operated upon as formerly. Ninety-five per cent of these cases can be cured, ... and nearly all of the other 5 per cent can be cured by special means, as Dr. Callison had suggested. Many cases are aggravated by open Eustachian tubes, and the closing off of that tube, as Dr. Yankauer suggested some years ago, has a decidedly beneficial effect. The great trouble is to keep the tube closed, and there seems to be no doubt but that by using this saturated solution of silver a great deal could be accomplished toward keeping the tube closed.

SECTION ON RHINOLOGY AND LARYNGOLOGY.

May 26, 1920.

Osteo-Sarcoma of Antrum. DR. H. S. DUNNING.

DISCUSSION.

DR. LEWALD showed several radiographs of the case, pointing out in an anterior projection in the superior maxillary region, a giant cell tumor. These tumors are ordinarily non-malignant. A tumor in this region is rather rare and Dr. Dunning removed so much of the growth that further operative procedure would not likely be necessary.

Dr. LeWald said he had another case, apparently a dentigerous cyst of the inferior maxillary bone, which presented some points of interest in connection with tumors of the jaw, the history of which case is:

C. C., female, age 22. *History*: Six months previous the patient's attention was called to a small swelling near the angle of the lower left jaw. Until this time she was unaware of it. The swelling is not painful and varies in size. *Physical*: Hard mass in inferior maxilla at angle of jaw. Thickening of mandible; at angle of jaw the ramus is split and a movable fragment of bone is palpable. Operation, May 29, 1920, by Dr. Barber at Bellevue Hospital. Diagnosis: Adamantinoma of jaw.

Stricture of the Esophagus. Pulmonary Suppuration Treated by Endobronchial Irrigation. Fibroma of the Left Lobe Bronchus, with Lung Abscess. Endobronchial Treatment. Laryngeal Stenosis. DR. SIDNEY YANKAUER.

DISCUSSION.

DR. MCCULLAGH asked if Dr. Yankauer considered the stricture as absolutely cured, so that no further dilatation would be necessary.

DR. IMPERATORI said that three years ago he presented three cases of stricture of the esophagus due to the swallowing of lye, one of the pa-

tients being a child, one a young adult, and the other a youth. All three have remained well since. In the child, the dilatation was started with the Jackson woven bougies, followed up with the Sippe dilators. It was necessary at the start to use bougies for the stricture was very small. In the other two cases, one was located at the crico-thyroid contriction and the other far down. How it happened that the others were located so far down was a question that was discussed at the time, and someone suggested that the patient had gulped the lye, so that the effect was produced low down. Two of the cases were private patients and have remained cured so far as known. Probably Dr. Yankauer's cases will remain cured, and should be dilated from time to time.

DR. YANKAUER said he thought the cases would remain cured, but he proposed to continue passing the bougies at lengthening intervals until convinced that an absolute cure was effected.

DR. IMPERATORI congratulated Dr. Yankauer and the members of the Section upon the wonderful scientific work effected in helping these patients. Anyone who had seen and smelled any of these lung abscess cases would realize how terrible they are, and Dr. Yankauer had been most successful in treating them. Dr. Yankauer deserves not only a great deal of credit but should be congratulated on being able to present these five cases and to show that 50 per cent of the cases cured and the others very nearly so. The odor of a lung abscess is something that no one can ever forget who has experienced it.

DR. MCCULLAGH asked Dr. Yankauer about the duration of these abscesses, whether if treated early they will yield more satisfactorily than those of longer standing. What had been his experience in relations to cures in that respect?

DR. YANKAUER, replying to Dr. McCullagh, said that it had been his experience that some of these cases get well spontaneously—resulting from the expectoration of the pus and the contraction of the lung cavity. That probably occurs in quite a few cases. We do not hear of all the lung abscess cases in laryngological work, but they occur occasionally in adults after anesthesia. The patients expectorate, and keep that up and get well. That cannot take place in the first three months, but if it does not take place within the first year it has been the experience of the internist that the patient will never get well of the abscess. Under that scheme, he had not had opportunity to irrigate at an earlier stage or bronchoscope at an earlier period than three months. He had hoped that some time he would get cases following a tonsillectomy at an early stage, but had not yet done so.

The history of lung irrigation is about as follows: The patients are admitted to the hospital and go to the internal medical service, where they are examined, studied, x-rayed, tested with the Wassermann reaction, and a few other methods, which occupy a few weeks. Then the surgeons get hold of them, and if it is decided not to operate they are turned over to the laryngologist, so that the cases are not available for this treatment at a very early stage.

The most rapid result he has had was in a girl thirteen years of age who was operated upon in San Francisco for removal of the tonsils, and the abscess had existed for a year. There was a distinct cavity that could be seen with the fluoroscope. The patient had not been out of bed for more than two weeks at a time during the whole of the year. The irrigation was started in January, and in February she was going to school. The irrigations were continued until the following fall. That was three years ago, and the girl is now supporting the family.

One point was worthy of emphasis. Two of these patients had lung abscesses following tonsillectomy. A few years ago there were at Mount Sinai Hospital eight patients who had lung abscess following a tonsillectomy from one hospital, and they are still getting cases of lung abscess following tonsillectomy. He had come to the conclusion that it is not justifiable to perform a tonsillectomy under general anesthesia.

It may result in a lung abscess only once in a long series of cases, but he would not care to be responsible for it when it does occur. It is impossible to keep the throat free during a general anesthesia. In all adult cases he operates under local anesthesia. It can be done painlessly, and nothing would persuade him to do a tonsillectomy on an adult under general anesthesia. A number of the men agree with him on this point.

Bony Ankylosis of Jaw. DR. HENRY S. DUNNING.

DISCUSSION.

DR. LEWALD showed a radiograph of the case and said that it is not always easy to tell the nature of the ankylosis. They did not know at first whether there was an ankylosis of both sides to deal with or whether it was right or left—and were at a loss to know whether it was necessary to operate on both sides. Finally it was determined by stereoscopic plates that there was a definite lack of any articular surface on the *right* side, and there appeared to be considerable bony change and thickening on that side and a faint articular surface on the other, so that no operation was performed on the left side. These cases usually go a very long time without any operative relief. Dr. Douglas presented a similar case recently which had gone on for a number of years, and it was remarkable how they obtained any nourishment. The food has to be broken up and forced between the teeth.

After operation the radiographic picture showed an opening of fully 3 centimeters between the upper and lower jaw, a very excellent result in such a complete bony ankylosis over such a large area.

DR. DUNNING said that the patient had such an atrophy on one side that it was thought it might be advisable to put plates on the upper and lower jaw with springs and keep them on the stretch, and contract the lower maxillary. The jaws were always on the stretch. The patient was instructed to chew gum, and not having been able to do it for eleven years, she did very well. Unfortunately she had not yet gained in weight, but she was doing very well.

DR. FOWLER congratulated Dr. Jacobs on his success in this case, and said that it cheered him very much to hear encouraging reports about the treatment of ozena, since so many specialists avoided treating these cases and preferred to pass them along to the next man to have a try at.

These cases are not hopeless. It is well to get that out of the heads of specialists. Many patients can be relieved of that frightful stench, and it is encouraging that Dr. Jacobs reports his increasing success.

The use of the suction apparatus to remove the crusts is a valuable suggestion and obviates the temptation to use a douche. Instead of scarlet-red emulsion, Dr. Fowler himself uses ichthyol ointment with similar technique and remarkably similar results. The essentials in the two methods seem to be the same, and in the last two or three years no case has come under his observation that did not lose its stench under treatment like that which Dr. Jacobs reported.

(*To be Continued.*)